# BLAUPUNKT CCR-806

MODEL

SERVICE MANUAL

# CCD-TR303E/TR303EP

## RMT-507

# SERVICE MANUAL

*AEP Model*
*UK Model*
*Australian Model*
*CCD-TR303E*
*E Model*
*CCD-TR303E/TR303EP*

Video8
Handycam
A MECHANISM

10x
SONY
Video8
Handycam
AE

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

CCD-TR303EP is a model that soft carrying case is added in CCD-TR303E.
CCD-TR303EP and CCD-TR303E have different packing material, etc.

**For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ" (9-973-199-11).**

## SPECIFICATIONS

### System

| | |
|---|---|
| Video recording system | Two rotary heads, Helical scanning FM system |
| Audio recording system | Two rotary heads, Helical scanning FM system |
| Video signal | PAL colour, CCIR standards |
| Usable cassette | 8 mm video format cassette |
| Tape speed | SP mode: Approx. 20.051 mm (13/16 inch)/s<br>LP mode: Approx. 10.058 mm (13/32 inch)/s |
| Recording time | SP mode: 1 h and 30 min (P5-90)<br>LP mode: 3 h (P5-90) |
| Playback time | SP mode: 1 h and 30 min (E5/P5-90)<br>LP mode: 3 h (P5-90) |
| Fast-forward/rewind time | Approx. 8.5 min (E5/P5-90) |
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electronic viewfinder (black and white) |
| Lens | Combined 10 × power zoom lens<br>f = 6.2 to 62 mm (1/4 to 2 1/2 inches)<br>F 1.6 to F 2.9<br>(45 to 450 mm (1 13/16 to 17 5/8 inches) when converted to a 35-mm still camera)<br>Filter diameter 37 mm (1 1/2 inches) |
| Autofocus sytem | TTL autofocus system<br>inner focus wide macro system |
| Colour temperature | Automatic |
| Minimum illumination | 1 lx (F 1.6) |
| Illumination range | 1 lx to 100,000 lx<br>(0.2 to 9,290 footcandles) |
| Recommended illumination | More than 100 lx (9.3 footcandles) |

### Output connector

| | |
|---|---|
| Video output | Phono jack, 1 Vp-p, 75 Ω<br>unbalanced sync negative |
| Audio output | Phono jack<br>−7.5 dBs (at impedance 47 kΩ)<br>impedance less than 2.2 kΩ |
| RFU DC OUT | Special minijack, DC 5 V |
| Ⓛ Remote jack | Stereo mini-minijack (ø2.5 mm) |
| MIC jack | Minijack, −66 dBs, low impedance with 2.5−3 V DC output, impedance 6.8 kΩ |

— Continued on next page —

## 8 VIDEO CAMERA RECORDER

SONY®

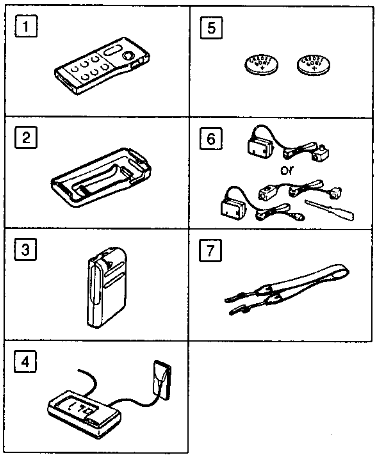
MICROFILM

**General**

| | |
|---|---|
| Power requirements | |
| | On battery mounting surface<br>6.0 V (battery pack)<br>7.5 V (AC power adaptor)<br>9.0 V (alkaline batteries) |
| Average power consumption | |
| | 5.3 W (camera recording) including the viewfinder |
| Installation | Vertically, Horizontally |
| Operating temperature | |
| | 0 °C to 40 °C (32 °F to 104 °F) |
| Storage temperature | |
| | −20 °C to +60 °C (−4 °F to +140 °F) |
| Dimensions | Approx. 109 × 109 × 178 mm (w/h/d) (4 3/8 × 4 3/8 × 7 1/8 inches) |
| Weight | Approx. 770 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette, and shoulder strap<br>Approx. 1,000 g (2 lb 3 oz) including the battery pack NP-55, lithium battery CR2025, cassette P5-90, and shoulder strap |
| Microphone | Electret condenser microphone, manaural type |

Supplied accessories

(A)



(A)

- 1 Wireless Remote Commander (1)
- 2 Remote Commander holder (1)
- 3 Battery pack NP-55 (1)
- 4 AC power adaptor AC-V35 (1)
- 5 Lithium battery CR2025 (2) (for camcorder/for the Remote Commander)
- 6 RFU adaptor
  - RFU-90E (1) (AEP model)
  - RFU-90AS (1) (Australian model)
  - RFU-89EA with an aerial selector and a screw driver (1) (UK/E model)
- 7 Shoulder strap (1)

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

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There is the color reproduction standard frame at the back of the book.

# SERVICE NOTE

## [SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

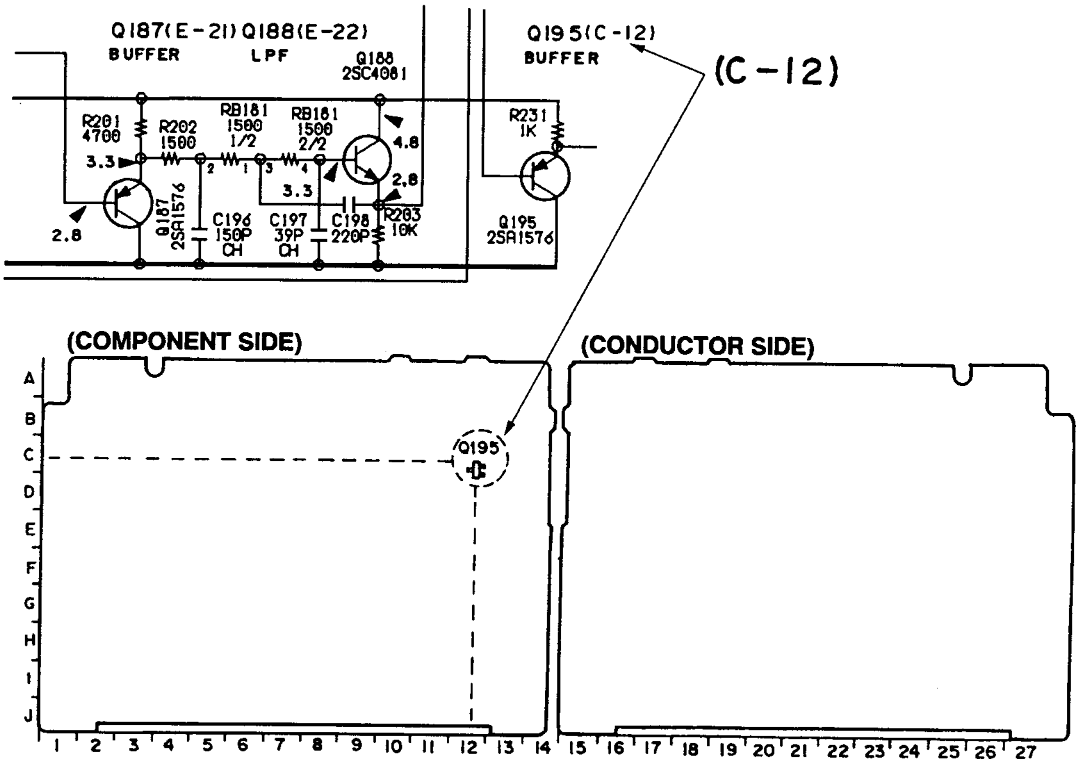
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

## [PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 95 and 107.)
This diagram is useful for repair.

## [SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
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## [HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

### Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [ ✪ ] mark is flashing in the viewfinder at this time, head clogs are occurred.

### Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

### Remedy

**[Cleaning method using a cleaning tape]**

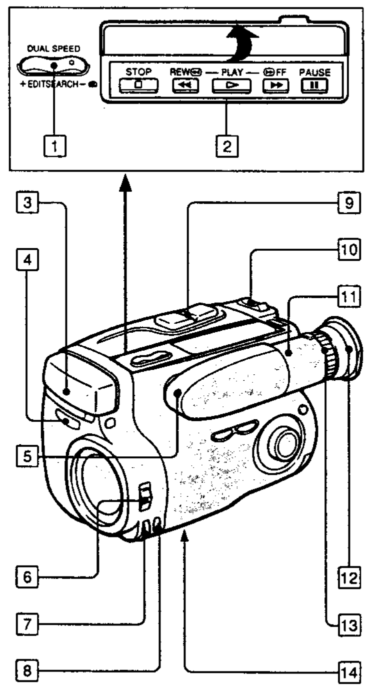
- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

# SECTION 1
# GENERAL

**This section is extracted from instruction manual of AEP/UK model.**

## Identifying the Parts

(B-1)



For details on the use of each part, refer to the pages indicated in the parentheses.

(B-1)

1 **EDITSEARCH button (26)**

2 **Tape transport buttons (37), (38)**
- □ STOP (stop)
- ◀◀ REW (rewind)
- ▷ PLAY (playback)
- ▶▶ FF (fast forward)
- ❚❚ PAUSE (pause)

3 **Built-in microphone (monaural)**

4 **Remote sensor (7)**

5 **Camera recording/battery lamp (24)**

6 **LENS COVER switch (23)**

7 **Focus dial (27)**

8 **FOCUS button (27)**

9 **Power zoom button (25), (27)**

10 **POWER switch**

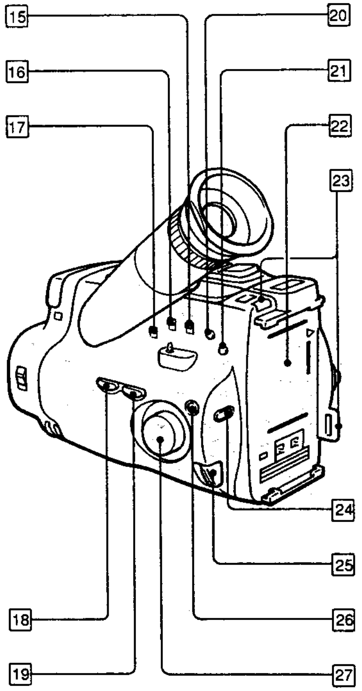
11 **Viewfinder (22)**

12 **Eyecup**

13 **Viewfinder lens adjustment ring (22)**

14 **Lithium battery compartment (9)**

(B-2)



## Identifying the Parts

(B-2)

15 **REC MODE (recording mode)/EDIT switch (23), (39)**

| Mode | Recording | Playback | Editing |
|---|---|---|---|
| Setting | REC MODE SP LP | EDIT | EDIT |
| Function | Recording mode switch | EDIT switch | |

16 **REMOTE COMMANDER ▣ ON/OFF switch (7)**

17 **BEEP switch (22)**

18 **DATE (+) button (19), (24), (31)**

19 **TIME (NEXT) button (19), (24), (31)**

20 **SUMMERTIME button (19), (31)**

21 **AREA button (31)**

22 **Battery mounting surface (12)**

23 **Hooks for shoulder strap**

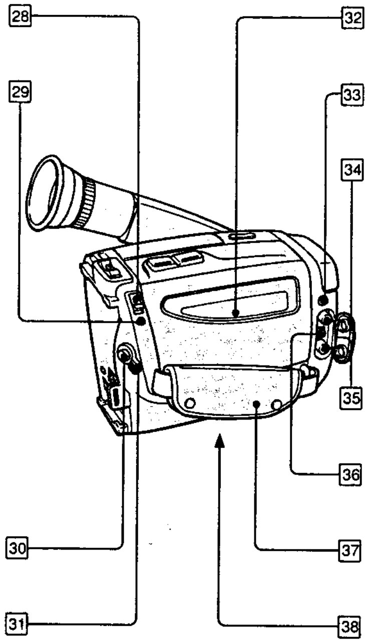
24 **COUNTER RESET button (23)**

25 **BATT (battery eject) knob (12)**

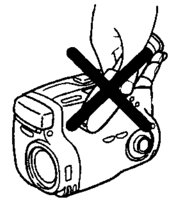
26 **FADER button (30)**

27 **PROGRAM AE dial (28)**

(B-3)



(B-4)



## Identifying the Parts

(B-3)

28 **EJECT knob (21)**

29 **Ⓛ* remote control jack (stereo mini-minijack)**

30 **START/STOP button (23)**

31 **STANDBY switch (19), (23)**

32 **Cassette compartment (21)**

33 **MIC (microphone) jack (PLUG IN POWER) (monaural minijack)**
Connect an external microphone (not supplied).

34 **Jack cover**

35 **Video/Audio output jack (phono jacks) (36), (39)**

36 **RFU DC OUT (DC output) jack (34), (35)**

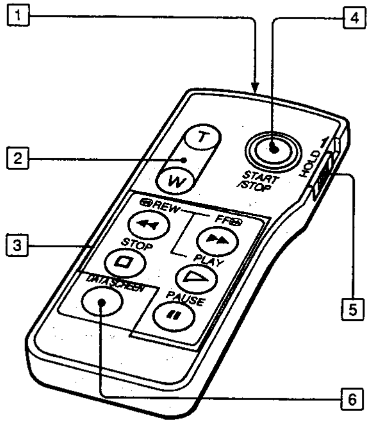
37 **Grip strap**

38 **Tripod receptacle**

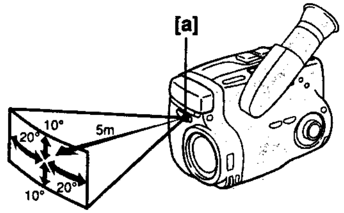
* **About Ⓛ (LANC)**
Ⓛ (LANC) stands for Local Application Control Bus System. The Ⓛ (LANC) connector is used for controlling the tape transport of video equipment and the peripherals connected to it.
This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

**Caution (B-4)**
Do not pick up the camcorder as shown in the illustration.

(B-5)



(B-6)



## Identifying the Parts

### Wireless Remote Commander

You can remotely record or play back a tape. The buttons on the Remote Commander with the same name or same mark as those on the camcorder have the same function.

**When you use the Remote Commander**
Be sure to insert the supplied lithium battery into it (page 10) and to set REMOTE COMMANDER Ⓡ ON/OFF on the camcorder to "ON".

(B-5)

1 **Transmitter**

2 **Power zoom button (25), (27)**

3 **Tape transport buttons (37), (38)**

4 **START/STOP button**

5 **HOLD switch***
Slide in the direction of the arrow to prevent the buttons from being accidentally depressed.

6 **DATA SCREEN button* (38)**
Press to erase or display the on-screen display.

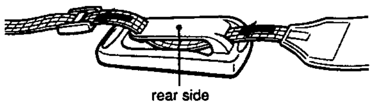
**Note**
The * indicates the function which is operable only with the Remote Commander.

**Remotely controllable area (B-6)**
Point the Remote Commander towards the remote sensor **[a]**.

**Notes on the Remote Commander**
- **Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise the remote control may not be effective.**
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works through the signals of commander mode "VTR 2". A commander mode is used to distinguish this camcorder from other Sony VTR to avoid misoperation. If you use another Sony VTR at commander mode "VTR 2", we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

## Identifying the Parts

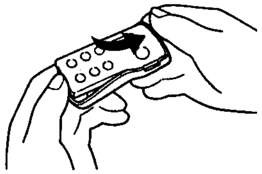
(B-7)



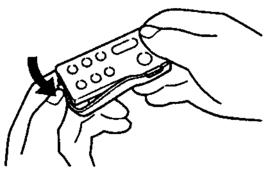
**Using the Remote Commander holder**
You can clip the Remote Commander holder on your coat pocket or belt, or also slide it onto the shoulder belt before attaching the Remote Commander to it. **(B-7)**

(B-8)

[a]



[b]

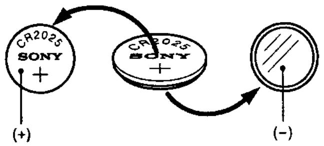


**(B-8)**

**[a]** When attaching the Remote Commander to the Remote Commander holder

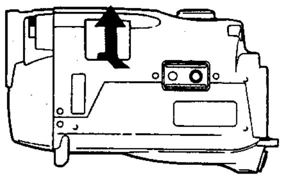
**[b]** When detaching the Remote Commander from the Remote Commander holder

(C-1)

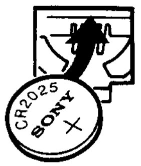


(C-2)

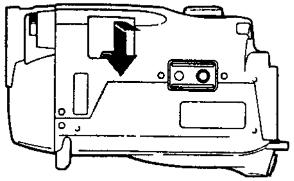
1



2



3



**Preparing your camcorder 1**

## Inserting the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a positive (+) side and a negative (–; no mark) side as illustrated. **Be sure to install the lithium battery with the correct polarity. (C-1)**

### Inserting the Lithium Battery into the Camcorder

(C-2)

This camcorder uses a lithium battery to activate the clock. At first install the supplied lithium battery.

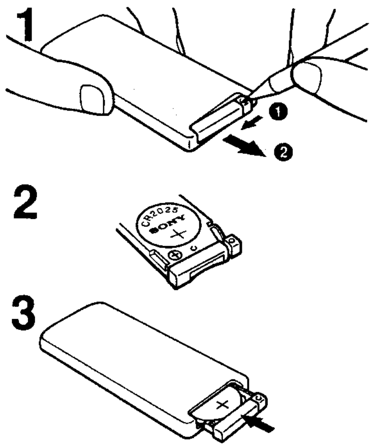
1. **Detach the lid of the lithium battery compartment at the bottom.**
2. **Install the supplied CR2025 lithium battery with the positive (+) side facing out.**
3. **Replace the lid.**

**To change the lithium battery**
Detach the lid of the lithium battery compartment, and replace the lithium battery with a new one.
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, resetting of the date and time will be necessary.

## Inserting the Lithium Batteries

### Inserting the Lithium Battery into the Remote Commander

(C-3)



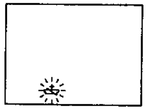
(C-3)

1 **Pull out the lithium battery holder from the Commander.**

2 **Install the lithium battery with the positive (+) side facing upward.**

3 **Put the lithium battery holder back into the Commander.**

(C-4)



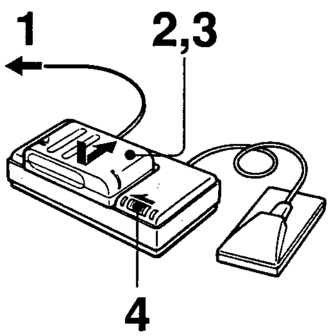
**Lithium battery life (under normal operation)**

(C-4)

The battery for the camcorder lasts for approximately 1 year.
When the battery becomes weak, the ⚡ indicator will flash inside the viewfinder for about 5 seconds (when the POWER switch is set to CAMERA).
The battery for the Remote Commander lasts for approximately 6 months. When the battery becomes weak or dead, the Commander does not work.
**In either case, replace the battery with a Sony CR2025 battery. Use of any other type of battery may present the risk of fire or explosion.**

CAUTIONS
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated.
  Do not recharge, disassemble, or dispose of in fire.

(D-1)



Preparing your camcorder 2

# Connecting the Power Sources

## First, Choose the Power Source.

| Place | Power source | Accessory to be used |
|---|---|---|
| Outdoors | Battery pack | Battery pack NP-55 (supplied), NP-55H, NP-66H, NP-77, NP-77H, NP-77HD |
| | Alkaline batteries | Battery case EBP-77 |
| Indoors | House current | AC power adaptor AC-V35 (supplied), AC-V55, AC-S10 |
| In the car | 12V or 24V car battery | DC pack DCP-77, AC power adaptor AC-V55, the car battery cord DCC-16AE and the car battery charger DC-S10 |

For details, see the operation manual of the accessory you want to use.

## Using the Battery Pack

Step 1

**Charge the battery pack. (D-1)**

1 **Connect the AC power adaptor to a wall outlet.**

2 **Align the right side of the battery pack with the line on the AC power adaptor.**

3 **Slide in the battery pack to the right.**

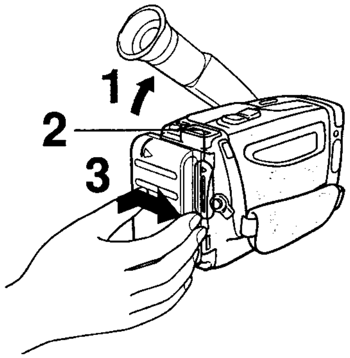
4 **Set the selector to "CHARGE" position.**
When charging is finished, the charge lamp goes out.

| | NP-55 | NP-55H | NP-77H/ 77HD | NP-77 | NP-66H |
|---|---|---|---|---|---|
| Required charging time* | 60 | 70 | 140 | 120 | 110 |
| Battery life** | 60 | 70 | 140 | 120 | 115 |

* Approximate minutes using AC-V35
** Approximate minutes using fully charged battery pack, continuous recording indoors

(continued)

(D-2)



**Step 2**

**Mount the battery pack on the camcorder. (D-2)**

1 **Lift up the viewfinder.**

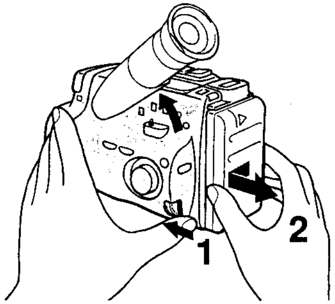
2 **Align the right side of the battery pack with the white line on the camcorder.**

3 **Slide the battery pack to the right.**

**Note**

Make sure that the battery fits completely on the mounting surface of the camcorder.

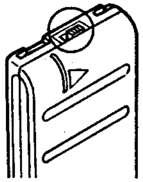
(D-3)



**To remove the battery pack**
**(D-3)**

While pressing the BATT knob in the direction of the arrow **(1)**, slide the battery pack to the left and pull it out as illustrated **(2)**.

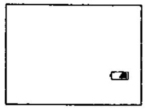
(D-4)



**How to use the switch on the battery pack**
**(D-4)**

This switch is provided so that you can remember the charging condition. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is dead.

(D-5)



**Remaining battery indicator**

You can check the remaining battery capacity with the remaining battery indicator inside the viewfinder. The decreasing white bar indicates decreasing battery power. **(D-5)**

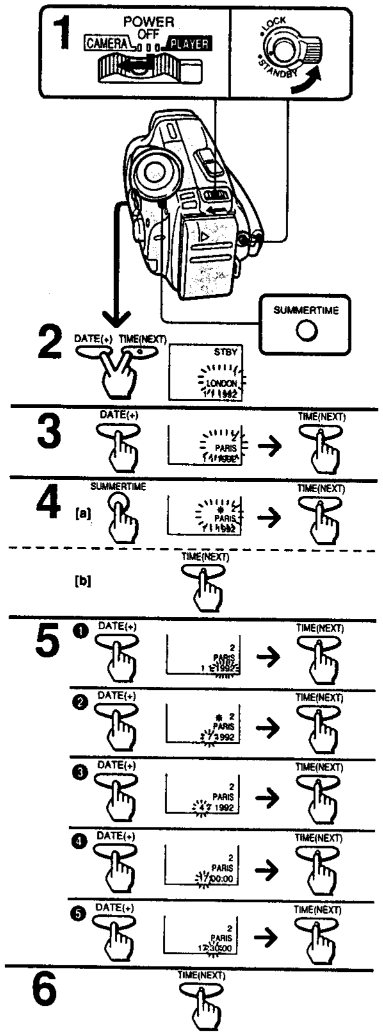
**Note**

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack. The indicator of NP-77HD is more accurate.

**Other options for charging**

- AC-V55 AC power adaptor:
  You can charge two battery packs simultaneously.
- AC-S10 AC power adaptor:
  This adaptor has a discharging function. When you want charging only, slide the skip switch on the adaptor in the direction of the arrow.
- BC-55 portable battery charger:
  You can charge a battery pack on 100 – 240 V AC.
- DC-S10 car battery charger:
  This charger has a discharging function. When you want charging only, slide the skip switch on the charger in the direction of the arrow.

(F)


1
POWER
OFF
CAMERA
PLAYER
LOCK
STANDBY
SUMMERTIME
2
DATE(+)
TIME(NEXT)
STBY
LONDON
3
DATE(+)
PARIS
TIME(NEXT)
4
[a]
SUMMERTIME
TIME(NEXT)
[b]
TIME(NEXT)
5
❶ DATE(+)
❷ DATE(+)
❸ DATE(+)
❹ DATE(+)
❺ DATE(+)
TIME(NEXT)
6
TIME(NEXT)

Preparing your camcorder 3

# Setting the Date and Time

(F)

Make sure that a power source and lithium battery are installed.

1 **While pressing the green button, set the POWER switch to CAMERA, and turn STANDBY up.**

2 **Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds until "1 LONDON" flashes inside the viewfinder.**
DATE (+) now functions as + (to advance numbers) and TIME (NEXT) functions as NEXT (to execute).

3 **Press DATE (+) until your area name and number appear and then press TIME (NEXT).**

| Countries | Area name | Area number |
|---|---|---|
| The United Kingdom and Portugal (GMT) | LONDON | 1 |
| Other European countries (CET) | PARIS | 2 |
| Finland, Greece, etc. | CAIRO | 3 |

4 **Choose one of the following options to set the clock:**
**[a]** To set to summer time, press SUMMERTIME. Then press TIME (NEXT). The ☀ indicator appears inside the viewfinder.
**[b]** To set to standard time, press TIME (NEXT).

5 **Set the year*, month, day, hour and minute, in this order.**
First adjust the flashing digits with DATE (+) and then press TIME (NEXT).
* To set the year to 1992, no need to press DATE (+) in step 5 – ❶.

6 **Press TIME (NEXT).**
The clock starts operating.

**To correct the date and time setting**
Press TIME (NEXT) repeatedly until the digits of minute stop flashing. Then repeat step 2 to 6.

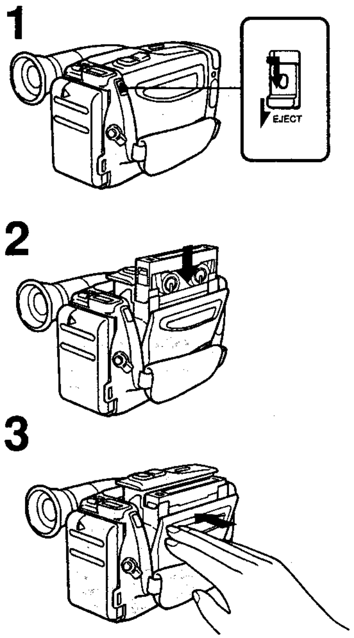
**To advance the digits faster**
Keep DATE (+) pressed.

**To check the preset date and time**
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

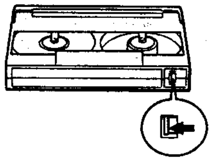
**To reset to standard time**
Press SUMMERTIME. The ☀ indicator goes off.

**If the camcorder goes off abruptly while setting the date and time**
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will go off automatically. Turn STANDBY down once and slide it up again.

(G-1)



(G-2)



**Preparing your camcorder 4**

# Inserting a Cassette

## Inserting a Cassette

**(G-1)**

Make sure that a power source is connected.

1 **While pressing the small button on the EJECT knob, slide the knob down.**
The cassette compartment automatically lifts up and opens toward you.

2 **Insert a tape with the window facing out.**

3 **Close the cassette holder by pressing the "PUSH" mark on the cassette holder.**

## Ejecting the Cassette

Make sure that a power source is connected.

1 **While pressing the small button on the EJECT knob, slide the knob down.**

2 **Take out the tape.**

3 **Close the cassette holder by pressing the "PUSH" make on the cassette holder.**

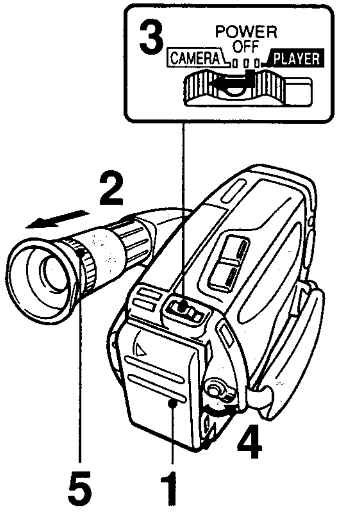
## Preventing Accidental Erasure

**(G-2)**

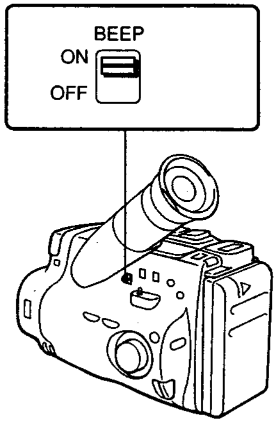
Slide the tab on the cassette to expose the red mark. This will prevent accidental erasure of the recording.
To re-record on this tape, slide the tab back out covering the red mark.
If you try to record with the red mark exposed, the ▭ and ≜ indicators flash inside the viewfinder.

**Note on handling tapes**
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape, or if the tab is out or in, etc.

(H)



(I)



**Preparing your camcorder 5**

# Adjusting the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust it when you use the camcorder for the first time, or when you use it after someone else did.
**(H)**

1 **Make sure that the power source is connected and that the cassette is inserted.**

2 **Pull the viewfinder out until it clicks.**

3 **While pressing the green button, set the POWER switch to CAMERA.**

4 **Turn STANDBY up.**

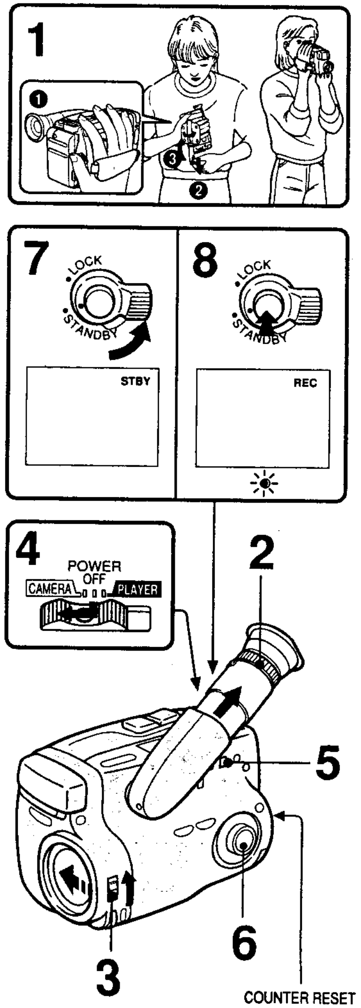
5 **Turn the viewfinder lens adjustment ring so that "STBY" displayed in the viewfinder screen comes into sharp focus.**

# Checking the BEEP Switch

**(I)**

A beep sounds when you start recording and two beeps sound when you stop recording, confirming the operation.
Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape.
If you do not want to hear the beep sound, set the BEEP switch to OFF.

(J-1)



# Recording a Picture Using Automatic Adjustments

Before recording "once-only" events, we strongly recommend you make a trial recording and check that everything is working properly.

If you set the date (page 19), the date is automatically recorded for 10 seconds after you start recording (Auto Date feature). This feature works only once a day.
If you set the BEEP switch to ON, beeps sound when you start or stop recording or when you make a mistake in the operation.

## Start Recording

(J-1)

1 **Hold the camcorder as illustrated.**

2 **Make sure that the viewfinder is pulled out.**

3 **Slide LENS COVER to OPEN.**
If it is not open, you cannot record.

4 **While pressing the green button, set the POWER switch to CAMERA.**

5 **Set the REC MODE switch to LP (long play) or SP (standard play), according to the length of your planned recording.**

6 **Set the white mark of the PROGRAM AE dial to the green position.**

7 **Turn STANDBY up.**
"STBY" appears inside the viewfinder.

8 **Press START/STOP.**
"REC" appears and the red lamp lights up inside the viewfinder. The camcorder is now recording.

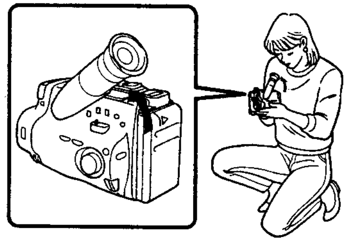
**To standby (to stop momentarily)**
Press START/STOP again.
"STBY" appears inside the viewfinder. The camcorder is in standby mode again.

**To stop**
Turn STANDBY down and set the POWER switch to OFF.

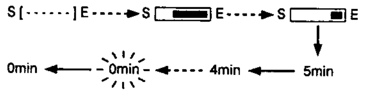
**To reset the counter to 0:00:00**
Press COUNTER RESET.

**Notes on recording**
- Shoot the subject at the wide-angle position in macro. At the telephoto position, if the subject is closer than 80 cm, it cannot be brought into focus.
- To record from the beginning of the tape, run the tape for about 15 seconds before recording. This will avoid missing the starting point when the tape is played back.

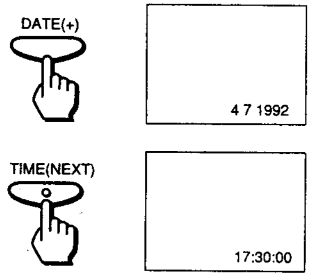
(J-2)



(J-3)



(J-4)



## Recording a Picture Using Automatic Adjustments

**For low-position recording (J-2)**
The viewfinder can be turned 90 degrees upward.
It can be used in either the pushed-down or pulled-out position.

**To check the remaining time of the tape during recording (J-3)**
In recording mode, the remaining tape length indicator appears inside the viewfinder and changes as illustrated.

**Near the end of the tape**
The ▨ indicator, the red lamp inside the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

**Note on the standby mode**
If you leave the camcorder in standby mode for 5 minutes or more, the camcorder will go off automatically. To resume standby mode, turn STANDBY down once and slide it up again. To start recording, press START/STOP directly.

**Note on the auto date feature**
The auto date feature works once a day.
However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.

**Recording mode**
You can record and play back a picture on a tape in both SP (standard play) and LP (long play) modes.
However, the quality of the playback picture in the LP mode will not be as good as that in the SP mode.

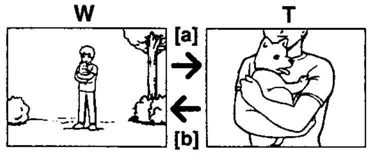
## Recording Date or Time

(J-4)

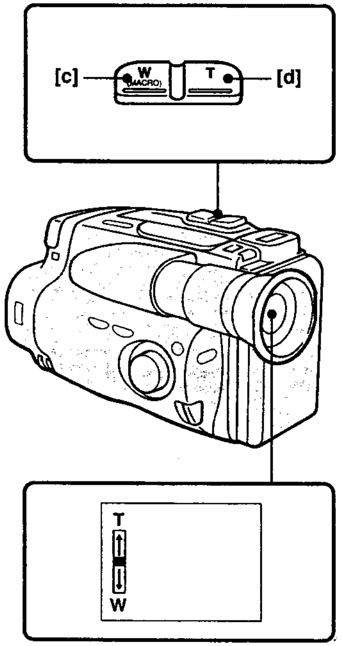
**During camera recording or when in standby mode, press DATE(+) for date indicator or TIME(NEXT) for time indicator.**
The date or time displayed inside the viewfinder is recorded with the picture.

**To stop recording date or time**
Press DATE(+) or TIME(NEXT) again.
The date or time indicator disappears.
The picture recording continues.

(J-5)



(J-6)



## Recording a Picture Using Automatic Adjustment

### Using Zooming Features

(J-5)

By zooming, you can change the size of the subject in the scene. Use "zoom-in (Telephoto)" for dramatic close-ups **[a]**, and "zoom-out (Wide-angle)" for panoramic long shots **[b]**. Also use the zoom to focus manually or to decide the shooting angle.
For more professional-looking recordings, use zooming sparingly.

**Dual-Speed Zooming (J-6)**

The camcorder's power zoom button offers dual speed zooming. Press it firmly for high speed zooming and softly for relatively slow zooming.

**[c]** W side: for wide-angle (subject appears farther away)
**[d]** T side: for telephoto (subject appears closer)

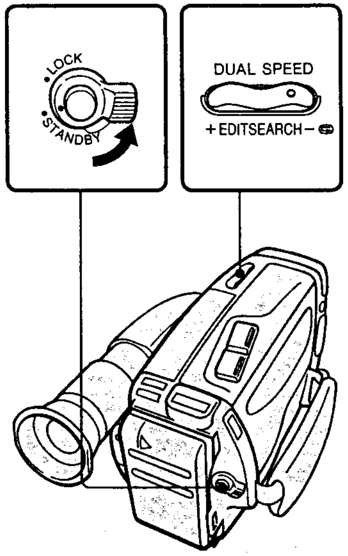
**Autofocusing in macro**
Even small subjects, such as flowers, insects, and images in photographs, can literally fill the screen using autofocusing in macro.
We recommend you to use a tripod when shooting in macro.

1 **Bring the camcorder as close as necessary to obtain the desired subject size.**

2 **Keep pressing the W (MACRO) side of the power zoom button until the zooming stops (wide-angle).**

**Manual focusing in macro**
You can also shoot with manual focus while doing close-up.
For manual focusing, see page 27.

(J-7)



## Recording a Picture Using Automatic Adjustments

### Checking the Recorded Picture Inside the Viewfinder (EDITSEARCH)

(J-7)

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture inside the viewfinder. After checking your recorded picture, you can also re-record over a previously recorded portion.

**To review the last recorded scene — Rec Review**
You can check the last portion of a scene you just recorded in CAMERA mode. This is convenient for quick, on-the-spot checks.

1 **Set the camcorder in standby mode by turning STANDBY up.**

2 **Press the − side of EDITSEARCH (⊜) momentarily.**
The last few seconds of the recorded portion are played back inside the viewfinder. Then, the camcorder goes back to standby mode, ready for the next recording.

**To check your recorded picture**
You can check the recorded picture inside the viewfinder. After checking, you can also re-record over a previously recorded portion.

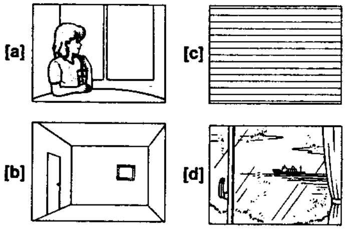
1 **Set the camcorder in standby mode by turning STANDBY up.**

2 **Keep pressing the + side or − side of EDITSEARCH to play back the picture while looking inside the viewfinder.**
+ side: to view the forward playback picture
− side: to view the reverse playback picture
Press EDITSEARCH softly to transport the tape at normal speed or firmly to trransport the tape at high speed.
To stop playback, release EDITSEARCH.

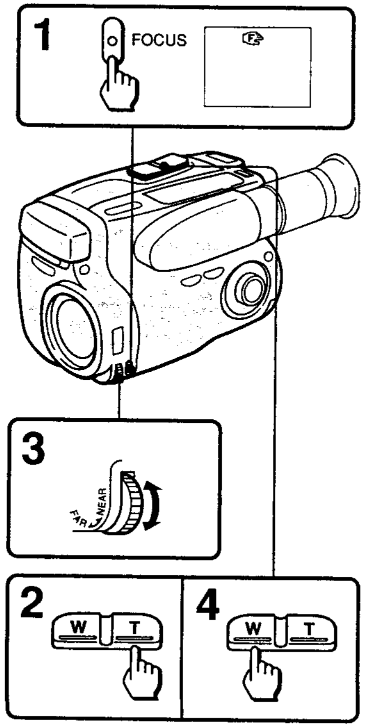
3 **If you want to re-record over a recorded portion, follow the procedures below:**
❶ Press the + side or − side of EDITSEARCH to locate the point you want to begin re-recording.
❷ Press START/STOP to begin re-recording. Re-recording begins from the point you released EDITSEARCH. As long as the tape is not ejected, the transition between the scenes will be smooth.

**Dual speed EDITSEARCH button**
The camcorder's EDITSEARCH button offers dual speed transport of the tape.
Press it softly to transport the tape at normal speed (◀ or ▶ appears inside the viewfinder), or firmly to transport the tape at high speed (⏪ or ⏩ appears inside the viewfinder).

(K-1)



(K-2)



## Manual Focusing

We recommend manual focusing in the following cases. **(K-1)**

**[a]** Too bright behind the subject
**[b]** Subjects with little contrast—wall, sky, etc.
**[c]** Horizontal stripes
**[d]** Subject through frosted glass

- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be in focus)
- When shooting a stationary subject using tripod
- When you want to save battery power

### Focusing Manually

(K-2)

1 **Press FOCUS .**
The (manual focusing) indicator appears inside the viewfinder.

2 **Keep pressing the T side of the power zoom button until the zooming stops (telephoto).**

3 **Turn the focus dial to achieve sharp focus.**

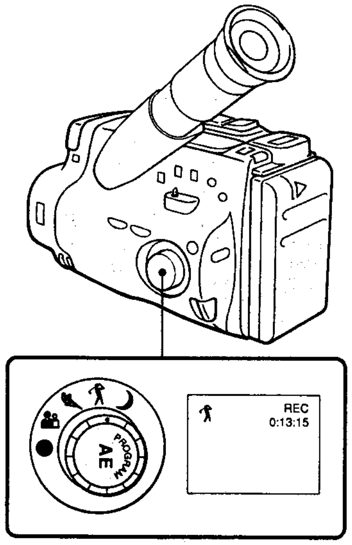
4 **Keep pressing the W side of the power zoom button to obtain the desired subject size.**

**To reactivate autofocusing**
Press FOCUS again so that the indicator disappears.

**Shooting in relatively dark places**
Shoot at wide angles after focusing in telephoto.

**Note**
The focus dial does not have a stop position.

(L-1)



## Using the PROGRAM AE Function

When you use the PROGRAM AE (Auto Exposure) function, you can create a "portrait" effect or capture high-speed action using the "sports" mode or "high-speed shutter" mode. When you record fireworks or neon signs, use "twilight" mode.

**(L-1)**

**Set the white mark of the PROGRAM AE dial to the desired PROGRAM AE mode.**
The indicator of the selected PROGRAM AE mode appears inside the viewfinder.

The PROGRAM AE mode indicator changes as follows:

No indicator (normal mode)
↕
("Portrait" mode)
↕
("Sports" mode)
↕
("High-speed shutter" mode)
↕
("Twilight" mode)

**To restore automatic adjustment**
Set the white mark of the PROGRAM AE dial to the green position.

(L-2)

[a]

[b]

[c]

[d]

## Using the PROGRAM AE Function

**To select the mode**
(L-2)
You may want to use the respective mode when shooting the following subjects or when shooting under the following conditions:

**[a] 👥 Portrait mode**
- A still subject such as a person or flower
- Subject behind an obstacle such as a net
- Zooming on a subject in the telephoto mode

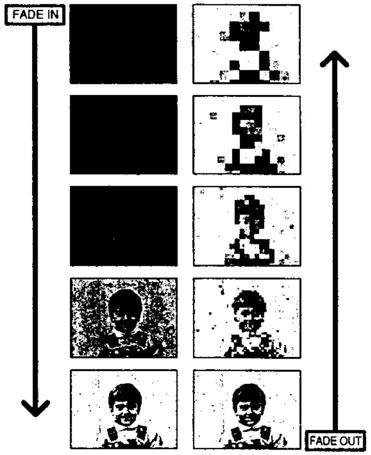
**[b] Sports mode**
- Recording a landscape while in a moving car
- Outdoor sports scene such as football or tennis
- Subjects moving at high speed, such as a roller coaster on a cloudy day

**[c] High-speed shutter mode**
- Shooting a golf swing or a tennis match with the tennis ball captured clearly on a fine day
- You wish to play back certain scenes having high speed movement and getting a clear, sharp picture

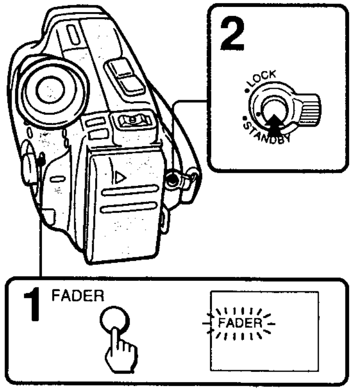
**[d] ☽ Twilight mode**
- Recording a night view, fireworks, or neon signs

**Note**
The shutter speed in each PROGRAM AE mode is as follows:
- Portrait mode — between 1/60 to 1/2000
- Sports mode — between 1/60 to 1/500
- High-speed shutter mode — 1/4000
- Twilight mode — 1/60

(M-1)



(M-2)



## Fade-in and Fade-out

(M-1)
You can fade-in or fade-out to give your recording a professional touch.
When fading-in, the picture will gradually appear from black or mosaic. The sound will also gradually increase.
When fading-out, the picture will gradually fade to black or mosaic. The sound will also gradually decrease.

**Fading-in or fading-out (M-2)**
Each time you press FADER, the indicator inside the viewfinder changes as follows:

(No indicator) → FADER (black fade) → M. FADER (mosaic fade)

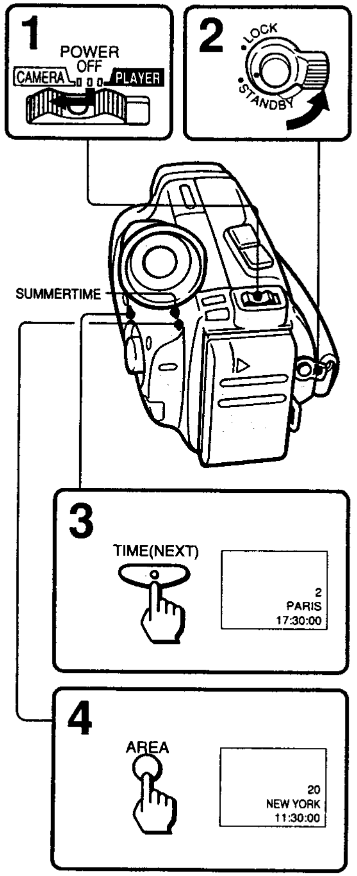
1 **Select the type of fade by pressing FADER as follows:**
  **[a]** When fading-in, press FADER after turning STANDBY up to put the camcorder into standby mode.
  The fade indicator starts flashing.
  **[b]** When fading-out, press FADER while recording.
  The fade indicator starts flashing.

2 **Press START/STOP.**
  When fading-in, the fade indicator stops flashing and the recording starts fading-in.
  When fading-out, the fade indicator stops flashing and the picture fades out and then the recording stops.

**To cancel the fade-in/fade-out function before it is performed**
Before pressing START/STOP, press FADER until the fade indicator disappears.

# Using the World Clock

(N-1)


1
POWER
OFF
CAMERA
PLAYER
2
LOCK
STANDBY
SUMMERTIME
3
TIME(NEXT)
2
PARIS
17:30:00
4
AREA
20
NEW YORK
11:30:00

This camcorder has a world clock. While traveling abroad, you can easily adjust time of the place where you are using the camcorder by pressing AREA.
Before pressing AREA, set the date and time in your country (see page 19).

(N-1)

1 **While pressing the green button, set the POWER switch to CAMERA.**

2 **Turn STANDBY up to set the camcorder in standby mode.**

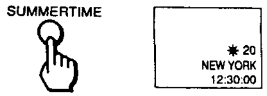
3 **Press TIME (NEXT).**
The time in your country appears inside the viewfinder.

4 **Press AREA until the area name and number where you are now using the camcorder appear.**
You can find the area name and number in the "Time Zone Chart" on the pages 32 and 33.

**To check the date**
Press DATE (+).
To turn off the date indication, press DATE (+) again.

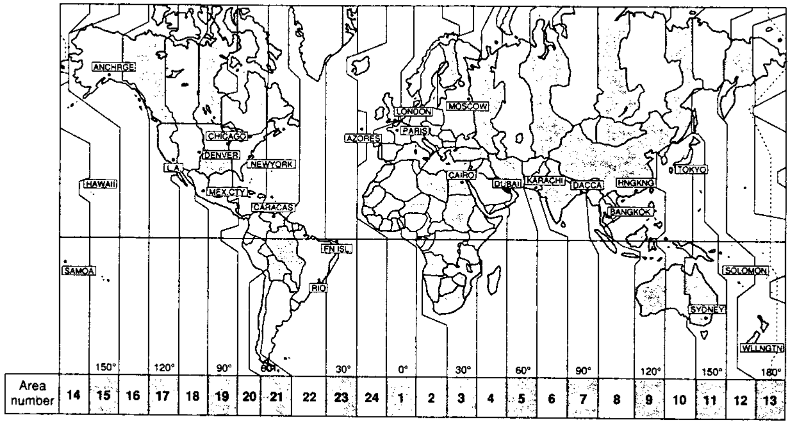
**To reset to your country area time**
Press AREA until your country area and number appears.

(N-2)


SUMMERTIME
✹ 20
NEW YORK
12:30:00

**To set summer time (N-2)**
Press SUMMERTIME. Time changes to summer time. ☀ indicator appears inside the viewfinder.
To set to standard time, press SUMMERTIME again.

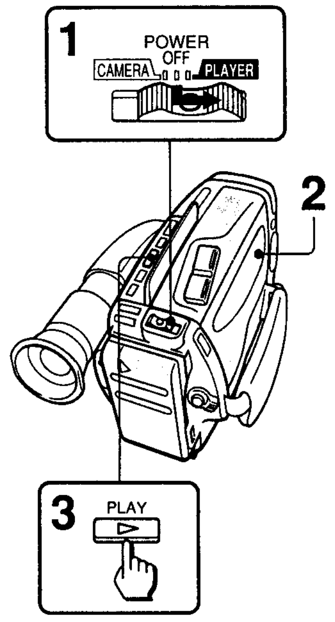
## Time Zone Chart


ANCHRGE
HAWAII
SAMOA
L.A.
CHICAGO
DENVER
NEWYORK
MEX CTY
CARACAS
FN ISL
RIO
AZORES
LONDON
PARIS
MOSCOW
CAIRO
DUBAI
KARACHI
DACCA
HNGKNG
BANGKOK
TOKYO
SYDNEY
SOLOMON
WLLNGTN
150°
120°
90°
60°
30°
0°
30°
60°
90°
120°
150°
180°
Area number
14
15
16
17
18
19
20
21
22
23
24
1
2
3
4
5
6
7
8
9
10
11
12
13

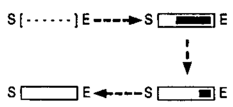
| Area number | Area name | Countries or area* |
|---|---|---|
| 1 | LONDON | England, Morocco, Portugal, GMT (Greenwich Mean Time) |
| 2 | PARIS | Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CST (Continental Standard Time), Tunisia |
| 3 | CAIRO | Egypt, Finland, Greece, Israel, Turkey |
| 4 | MOSCOW | Ethiopia, Iraq, Kenya, Mauritius, Saudi Arabia, Seychells, former U.S.S.R (Moscow) |
| 5 | DUBAI | United Arab Emirates |
| 6 | KARACHI | Moldives, Pakistan |
| 7 | DACCA | Bangladesh, India, Myanmar |
| 8 | BANGKOK | Cambodia, Indonesia (Jakarta), Thailand, Vietnam |
| 9 | HNGKNG | Australia (Perth), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan |
| 10 | TOKYO | Japan, Korea |
| 11 | SYDNEY | Australia (Sydney) |
| 12 | SOLOMON | New Caledonia |
| 13 | WLLNGTN | Fiji, New Zealand |
| 14 | SAMOA | Western Samoa |
| 15 | HAWAII | Hawaii I., Tahiti, HST (Hawaii Standard Time) |
| 16 | ANCHRGE | U.S.A. (Alaska), AST (Alaska Standard Time) |
| 17 | L.A. | U.S.A. (Los Angeles, San Francisco), PST (Pacific Standard Time) |
| 18 | DENVER | U.S.A. (Denver), MST (Mountain Standard Time) |
| 19 | CHICAGO | Mexico, U.S.A. (Chicago), CST (Central Standard Time) |
| 20 | NEWYORK | Canada (Montreal), Jamaica, Peru, U.S.A. (New York, Washington D.C.), EST (East Standard Time) |
| 21 | CARACAS | Chile, Dominica, Venezuela |
| 22 | RIO | Argentina, Brazil, Uruguay |
| 23 | FN ISL. | Fernando de Noronha |
| 24 | AZORES | Azores Islands |

* These are common names. The formal names may be different.

(P-1)



(P-2)



## Playing Back a Tape

Turn on the TV, and select the channel for viewing a playback picture (set the TV/VIDEO selector to VIDEO).
Of course, you can monitor the playback picture inside the viewfinder at the same time.
**(P-1)**

1 **While pressing the green button, set the POWER switch to PLAYER.**

2 **Insert a tape.**

3 **Press ▷.**
Playback starts.

**To view a still picture,** press **II** during playback.
**To resume playback,** press **II** or ▷ again.

**Notes**
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.
- Streaks appear and sound is muted in still picture mode.

**To rewind the tape,** press ◀◀.

**To advance the tape raidly,** press ▶▶.

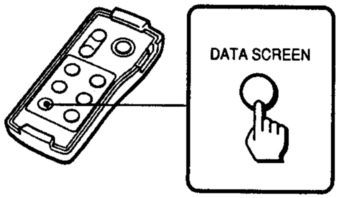
**To stop the tape,** press □.

**To stop the tape momentarily,** press **II.**

**In playback pause mode,** you can view the picture in a sequence of stop-motion images by pressing EDITSEARCH. If you keep pressing EDITSEARCH, you can view the picture playback in the forward or reverse direction.

**To check the remaining time of the tape during playback (P-2)**
In playback mode, the remaining tape length indicator appears inside the viewfinder and changes as illustrated.

(P-3)



## Monitoring a High-Speed Picture

**To locate a scene (picture search)**
Keep pressing ◀◀ or ▶▶ during playback. You can monitor the picture at high speed as long as you keep pressing the button.
**To resume a normal playback,** release the button.

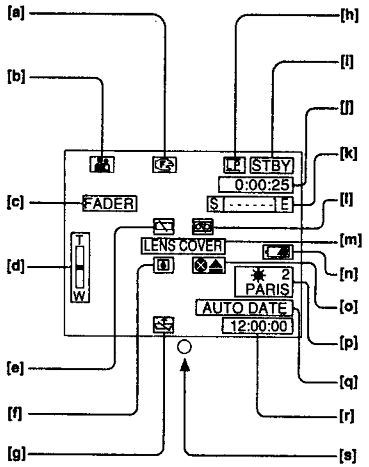
**To locate a scene quickly (skip scan)**
Keep pressing ◀◀ during rewinding, or ▶▶ while advancing the tape rapidly.
You can monitor the picture at high speed as long as you keep pressing the button.
**To resume a normal fast forwarding or rewinding,** release the button.
**To resume a normal playback,** press ▷.

## Displaying the Viewfinder Screen Indicators on the TV

(P-3)

**Press DATA SCREEN on the Remote Commander.**
The indicators inside the viewfinder screen appear on the TV.
To erase the indicators, press DATA SCREEN again.

(T-1)



## Indicators inside the Viewfinder

(T)

**[a] Manual focusing**

**[b] Setting of PROGRAM AE mode**

**[c] FADER is pressed.**

**[d] Power zoom indicator**

**[e] "Replace battery."**

**[f] "Moisture has condensed."**

**[g] "Replace lithium battery."**

**[h] Recording/Playback mode (LP/SP)**

**[i] Tape transport and camera recording mode**

**[j] Tape counter**

**[k] Remaining tape length indicator**

**[l] "Exchange tape or no cassette inside."**

**[m] The lens cover is closed.**

**[n] Remaining battery indicator**

**[o] "Clean video heads (⊗)" or "trouble has occurred (⏏)".**

**[p] World clock indicator**

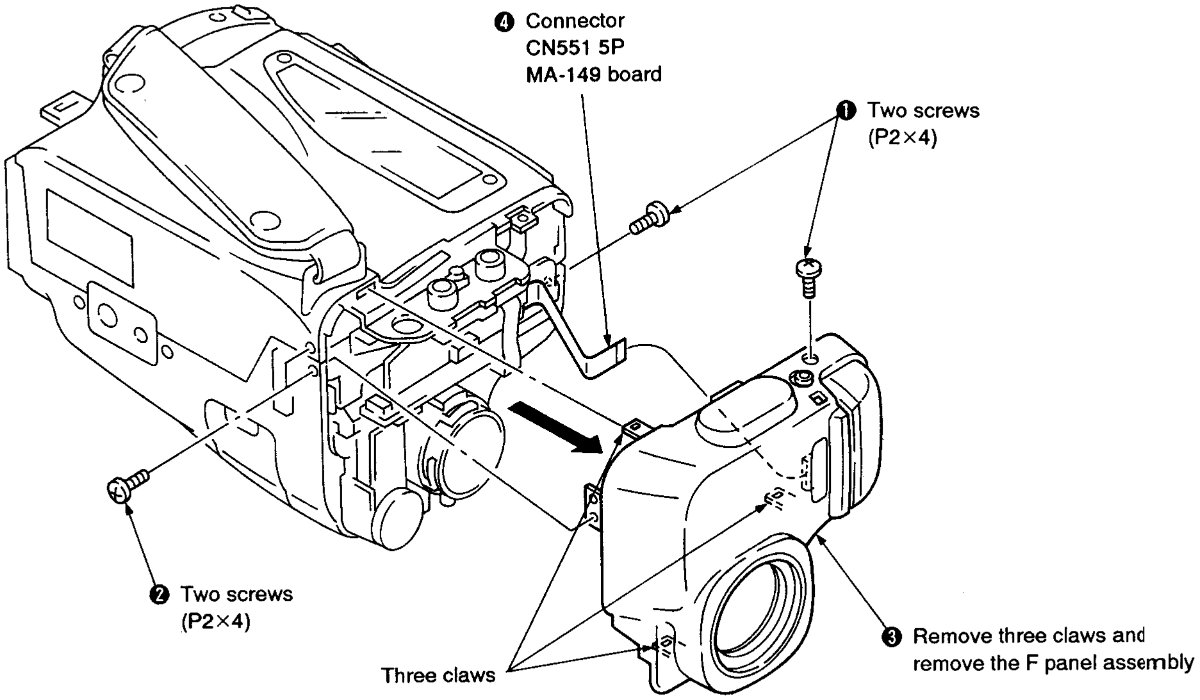
**[q] Auto date indicator**

**[r] Date or time**

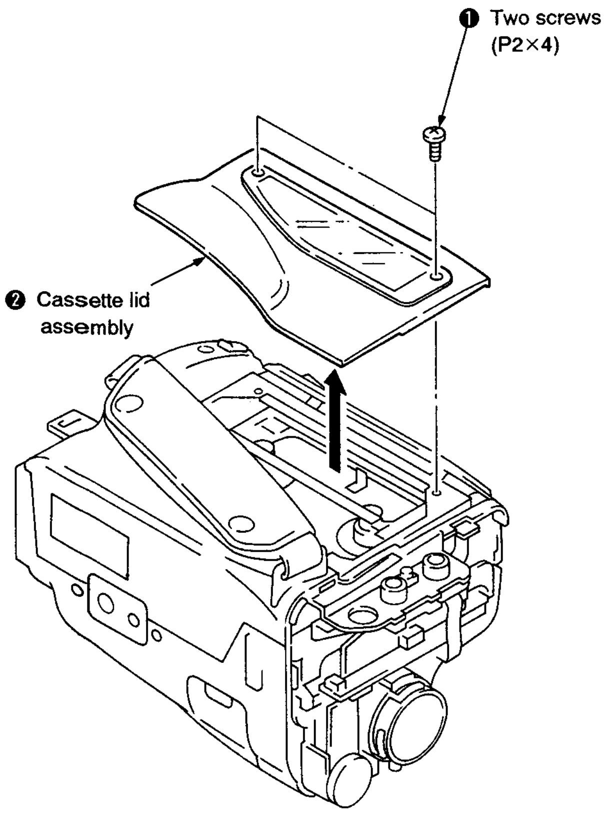
**[s] Lights up during recording.
When flashing: "Replace battery."**

# SECTION 2
# DISASSEMBLY

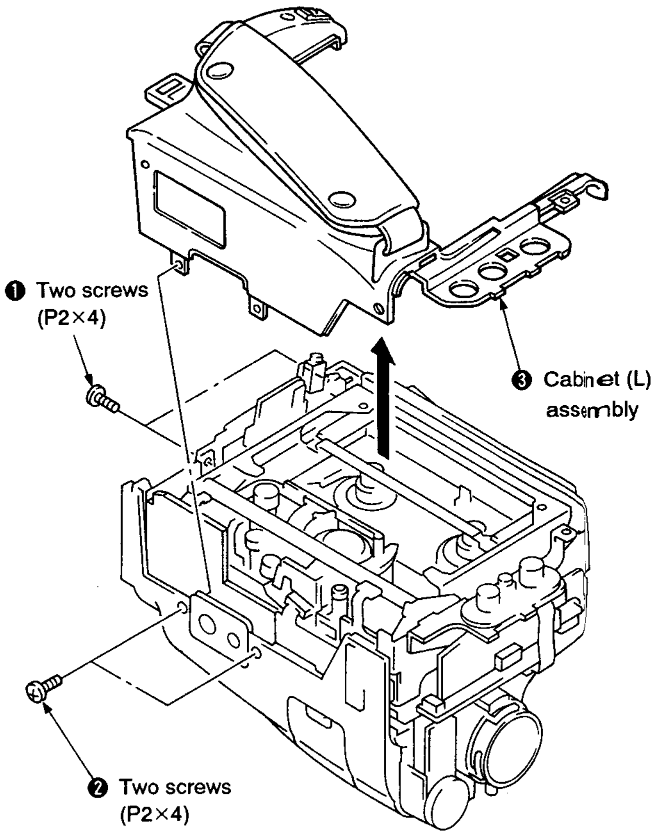
## 2-1. REMOVAL OF F PANEL ASSEMBLY


❹ Connector
CN551 5P
MA-149 board
❶ Two screws
(P2×4)
❷ Two screws
(P2×4)
Three claws
❸ Remove three claws and
remove the F panel assembly

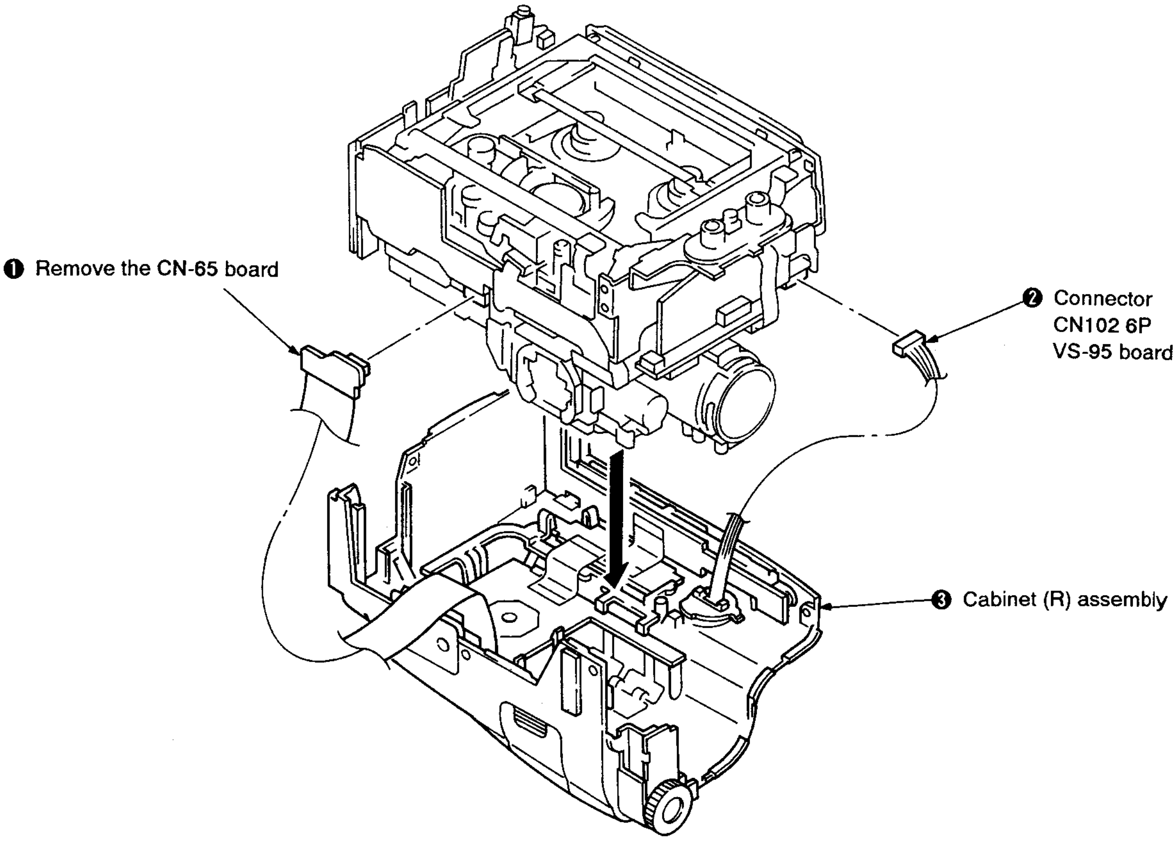
## 2-2. REMOVAL OF CASSETTE LID ASSEMBLY


❶ Two screws
(P2×4)
❷ Cassette lid
assembly

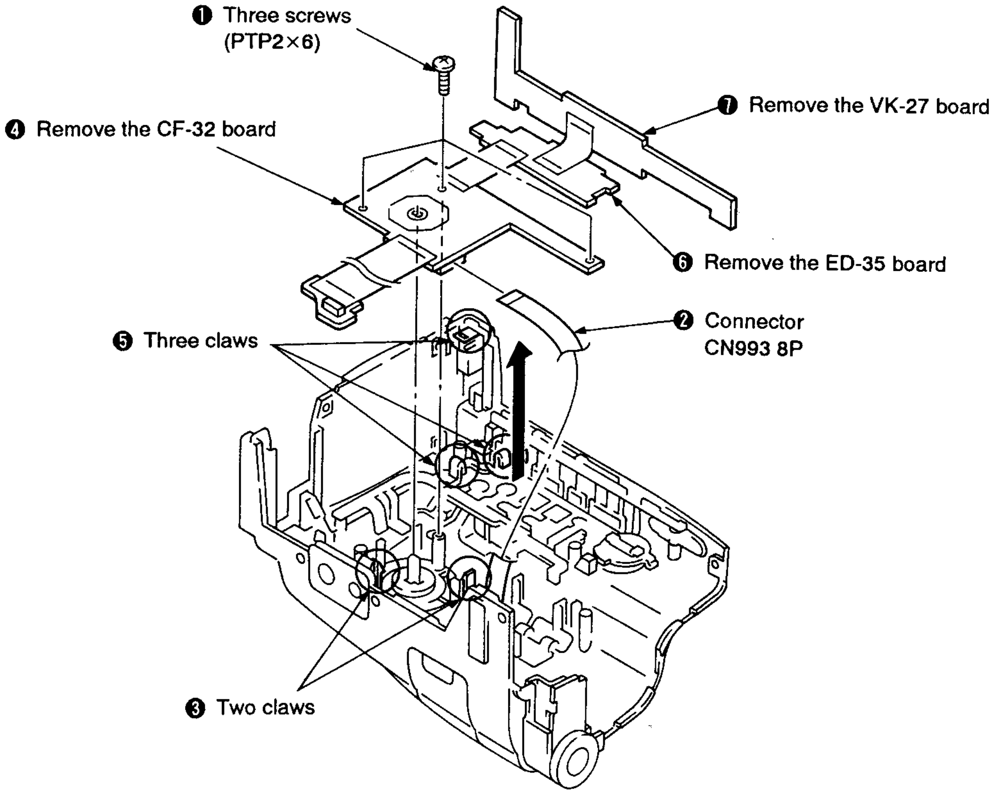
## 2-3. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws
(P2×4)
❷ Two screws
(P2×4)
❸ Cabinet (L)
assembly

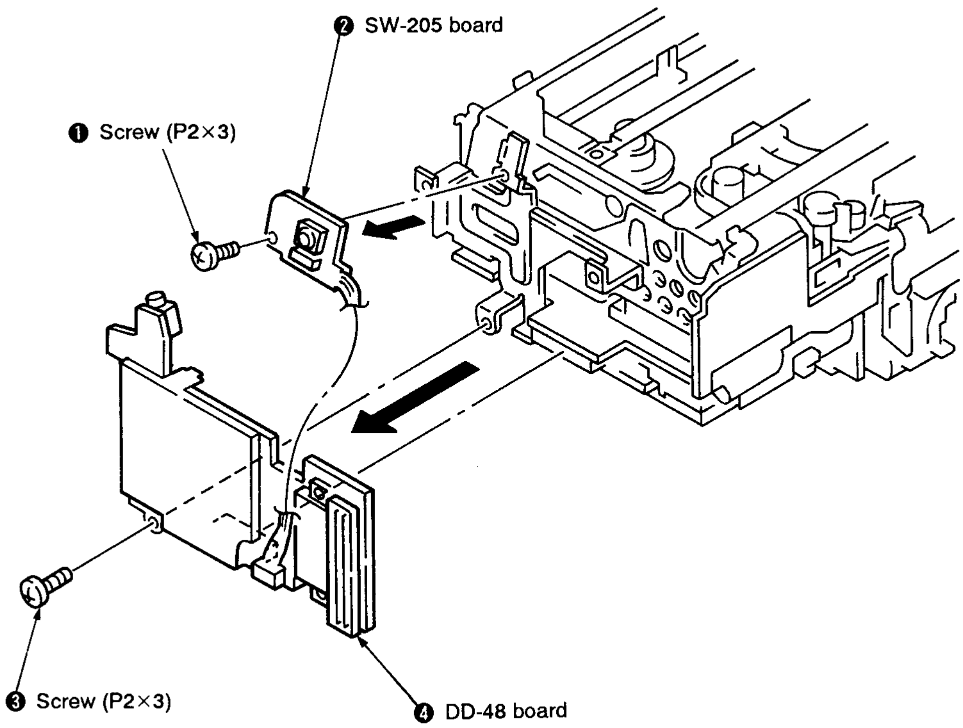
## 2-4. REMOVAL OF CABINET (R) ASSEMBLY


❶ Remove the CN-65 board
❷ Connector CN102 6P VS-95 board
❸ Cabinet (R) assembly

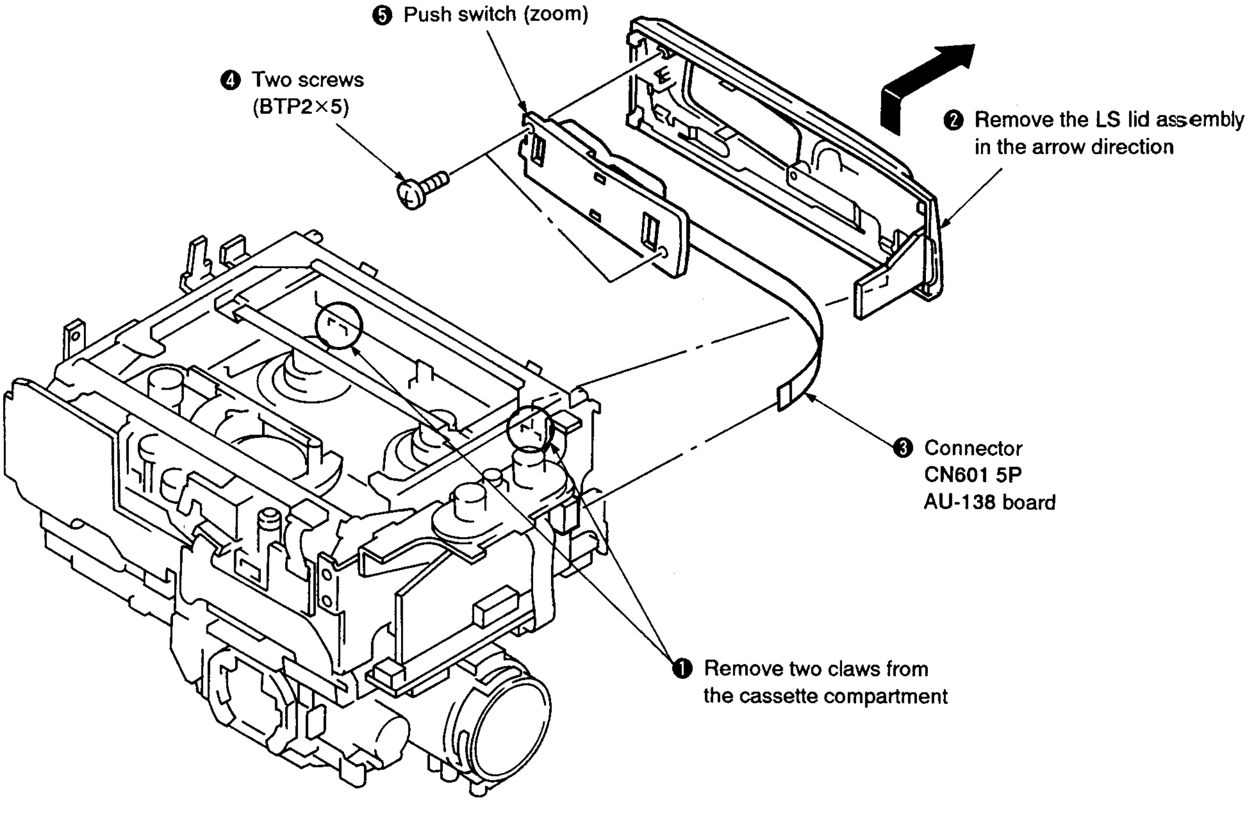
## 2-5. REMOVAL OF CF-32, ED-35 AND VK-27 BOARDS


❶ Three screws (PTP2×6)
❼ Remove the VK-27 board
❹ Remove the CF-32 board
❻ Remove the ED-35 board
❷ Connector CN993 8P
❺ Three claws
❸ Two claws

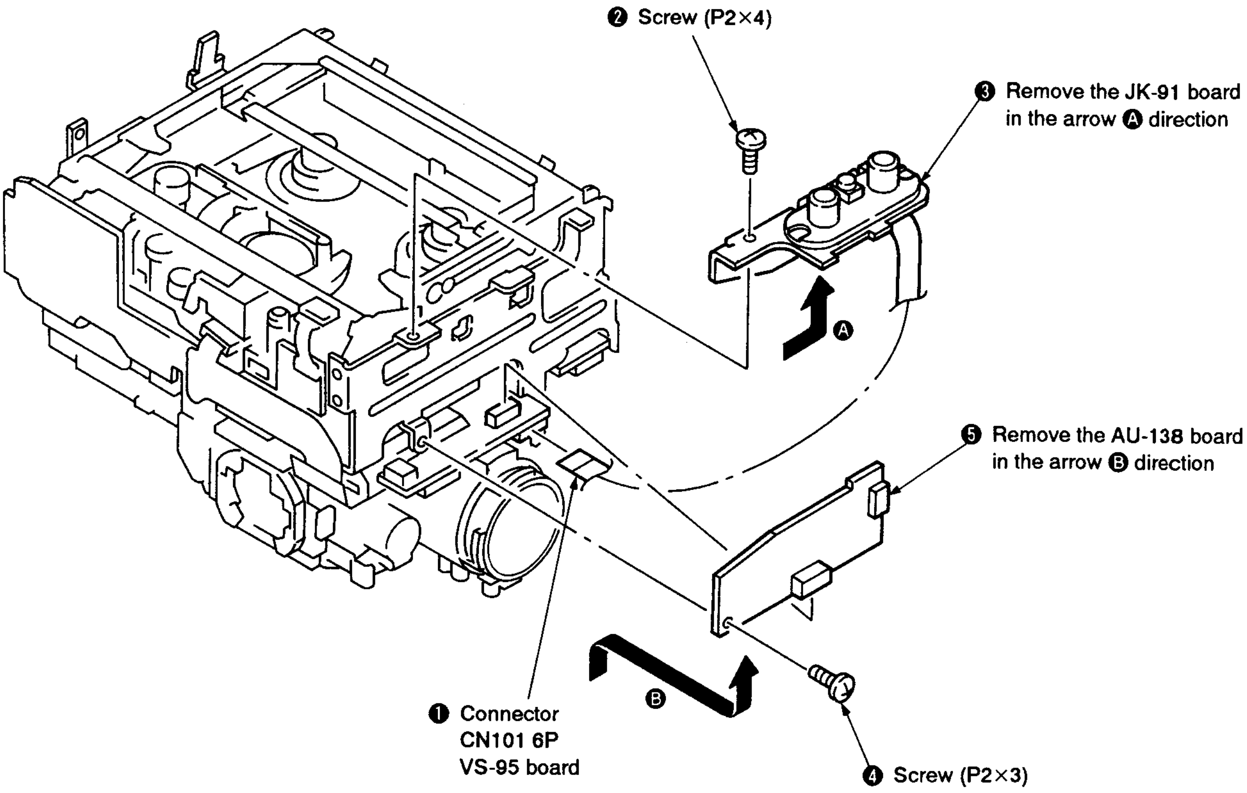
## 2-6. REMOVAL OF DD-48 AND SW-205 BOARDS


❷ SW-205 board
❶ Screw (P2×3)
❸ Screw (P2×3)
❹ DD-48 board

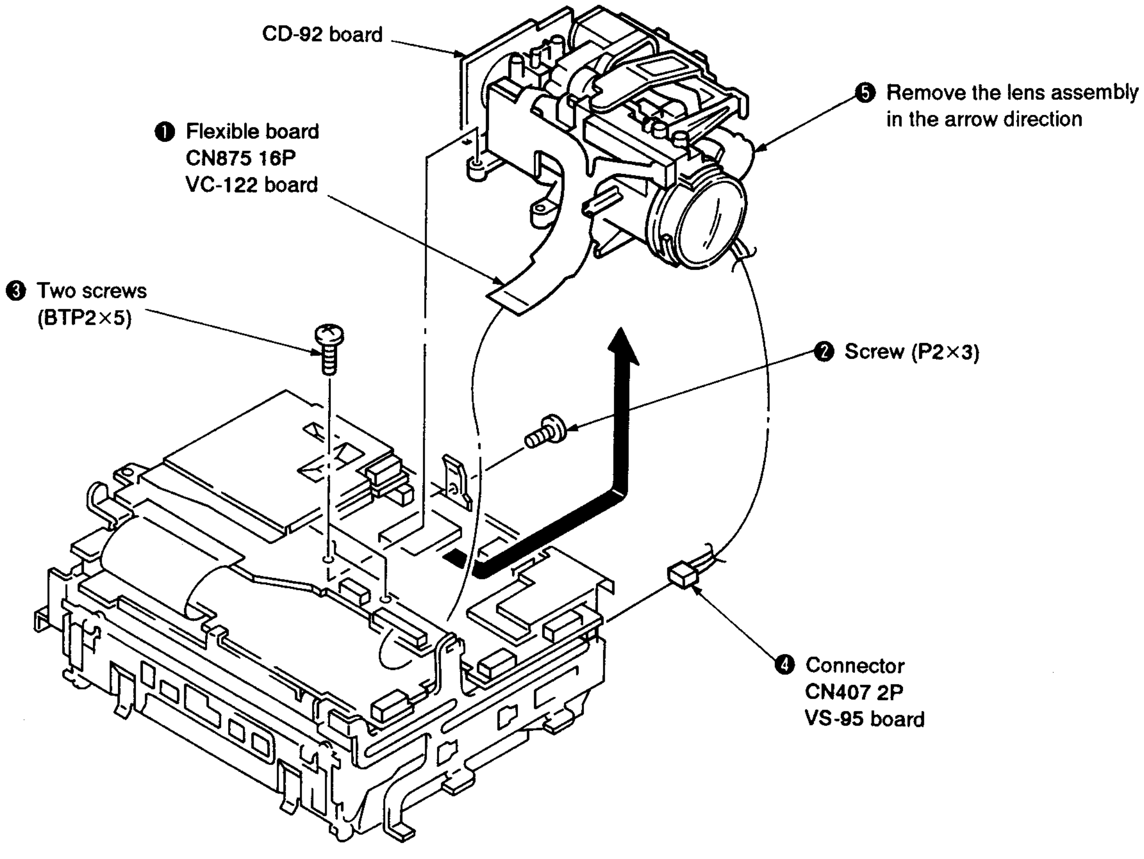
## 2-7. REMOVAL OF LS LID ASSEMBLY


❺ Push switch (zoom)
❹ Two screws (BTP2×5)
❷ Remove the LS lid assembly in the arrow direction
❸ Connector CN601 5P AU-138 board
❶ Remove two claws from the cassette compartment

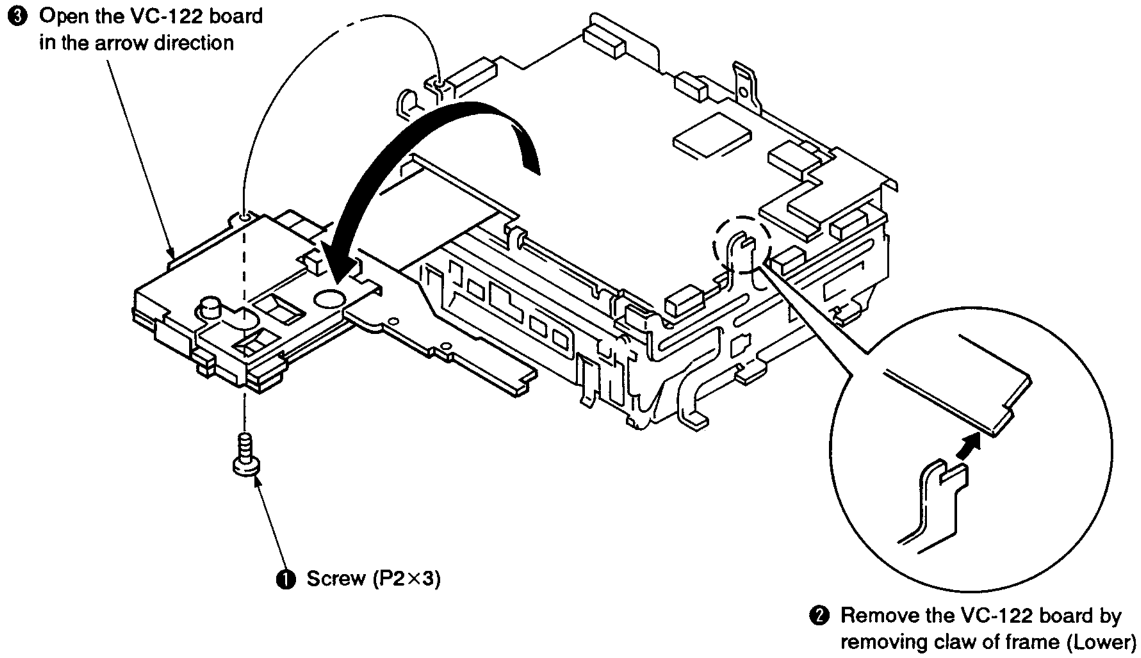
## 2-8. REMOVAL OF JK-91 AND AU-138 BOARDS


❷ Screw (P2×4)
❸ Remove the JK-91 board in the arrow Ⓐ direction
Ⓐ
❺ Remove the AU-138 board in the arrow Ⓑ direction
Ⓑ
❶ Connector CN101 6P VS-95 board
❹ Screw (P2×3)

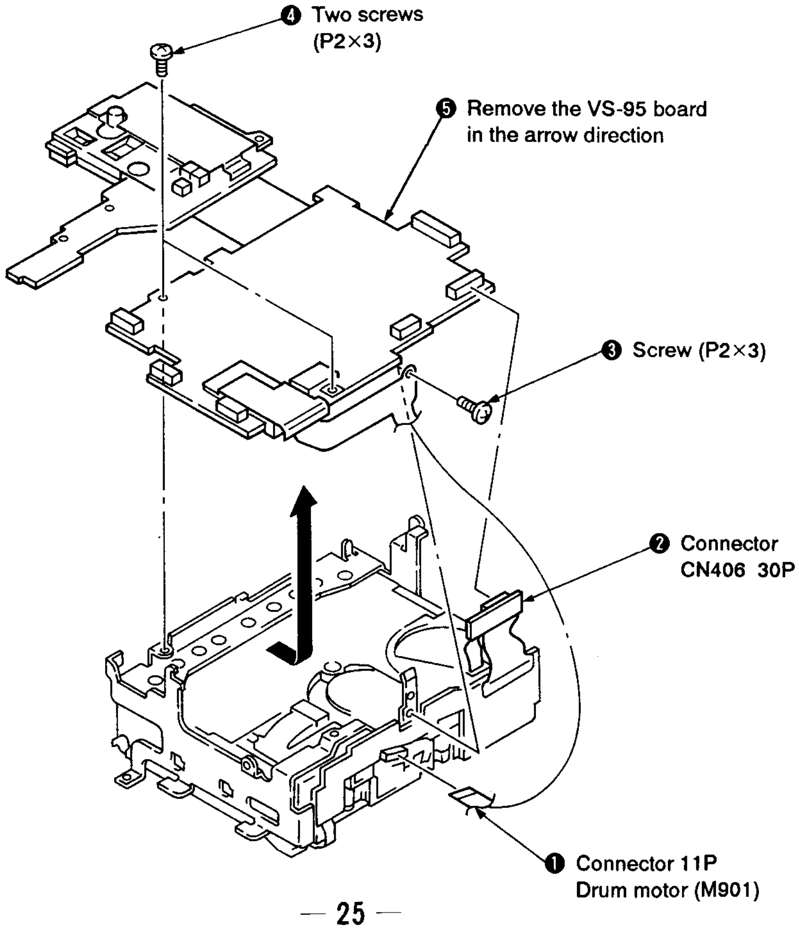
## 2-9. REMOVAL OF LENS ASSEMBLY (CD-92 BOARD)


CD-92 board
❶ Flexible board CN875 16P VC-122 board
❺ Remove the lens assembly in the arrow direction
❸ Two screws (BTP2×5)
❷ Screw (P2×3)
❹ Connector CN407 2P VS-95 board

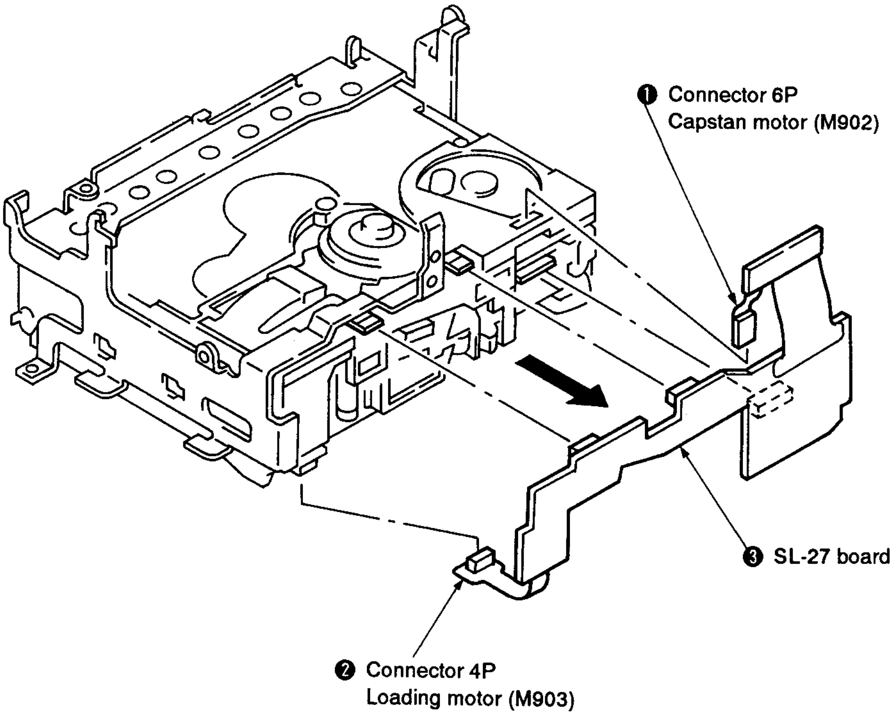
## 2-10. OPENING OF VC-122 BOARD


❸ Open the VC-122 board
in the arrow direction
❶ Screw (P2×3)
❷ Remove the VC-122 board by
removing claw of frame (Lower)

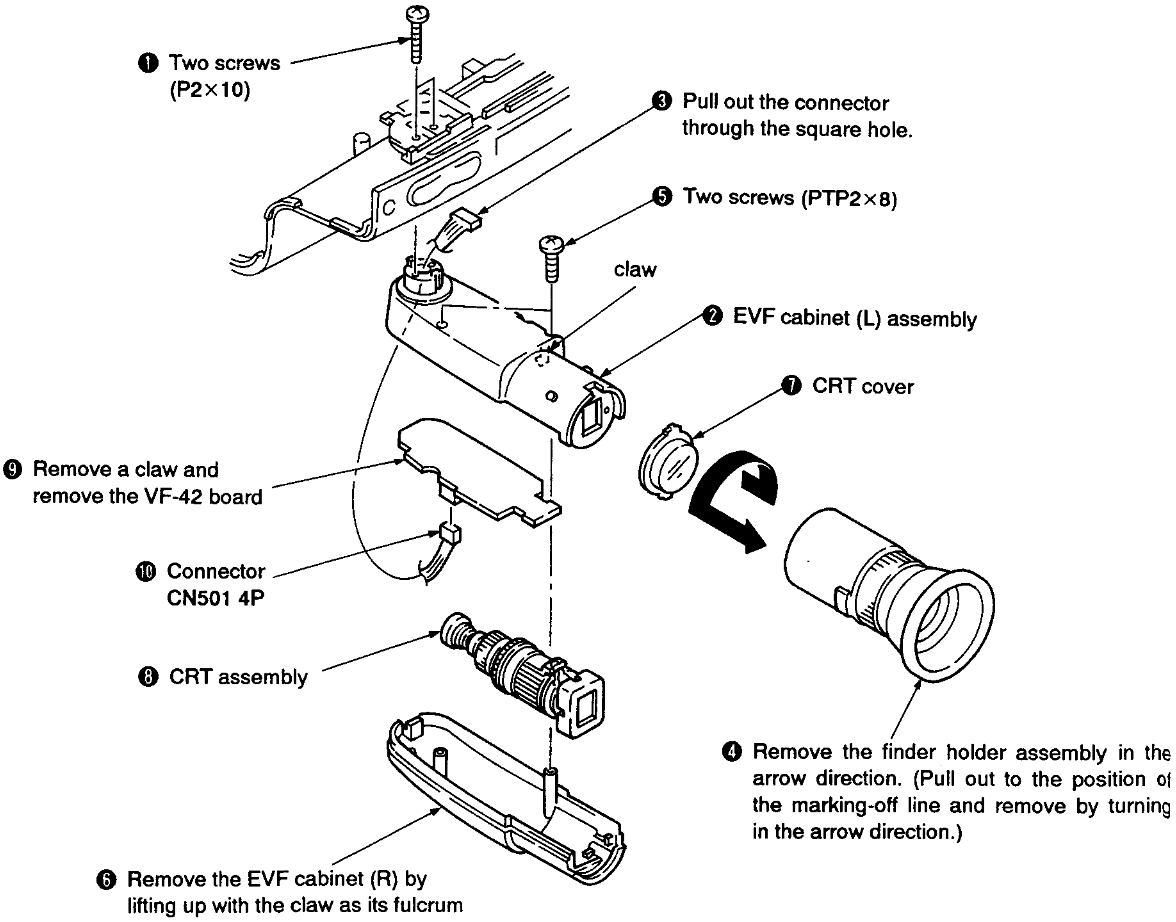
## 2-11. REMOVAL OF VS-95 BOARD


❹ Two screws
(P2×3)
❺ Remove the VS-95 board
in the arrow direction
❸ Screw (P2×3)
❷ Connector
CN406 30P
❶ Connector 11P
Drum motor (M901)

## 2-12. REMOVAL OF SL-27 BOARD

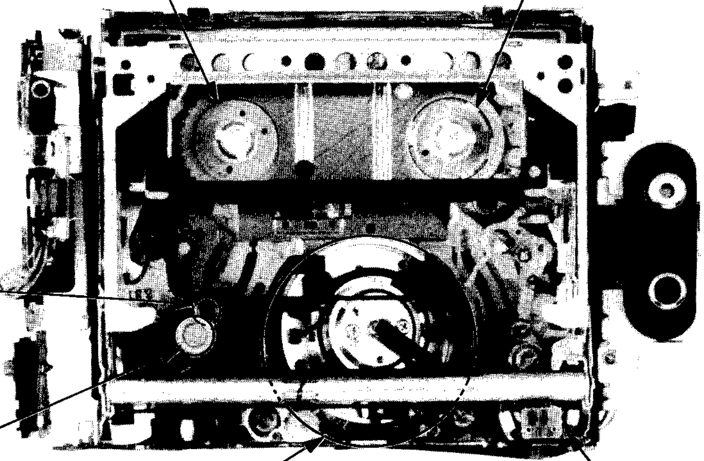

❶ Connector 6P
Capstan motor (M902)
❸ SL-27 board
❷ Connector 4P
Loading motor (M903)

## 2-13. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)


❶ Two screws
(P2×10)
❸ Pull out the connector
through the square hole.
❺ Two screws (PTP2×8)
claw
❷ EVF cabinet (L) assembly
❼ CRT cover
❾ Remove a claw and
remove the VF-42 board
❿ Connector
CN501 4P
❽ CRT assembly
❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)
❻ Remove the EVF cabinet (R) by
lifting up with the claw as its fulcrum

## 2-14. INTERNAL VIEWS

### — Left side —



T reel table assembly
X-3941-274-1

S reel table assembly
X-3941-275-1

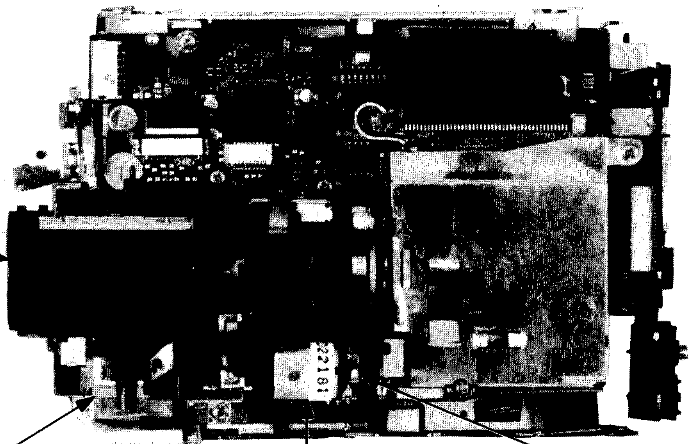
Pinch roller

M902
Capstan motor (SCE-0101A)
8-835-477-01

M901
Drum assembly (DGH-90A-R)
A-7048-585-A
Upper drum assembly (DGR-90-R)
A-7049-521-A

M903
Loading motor assembly
A-7040-304-A

### — Right side —



Zoom lens (VCL-6210WC)
1-547-548-11

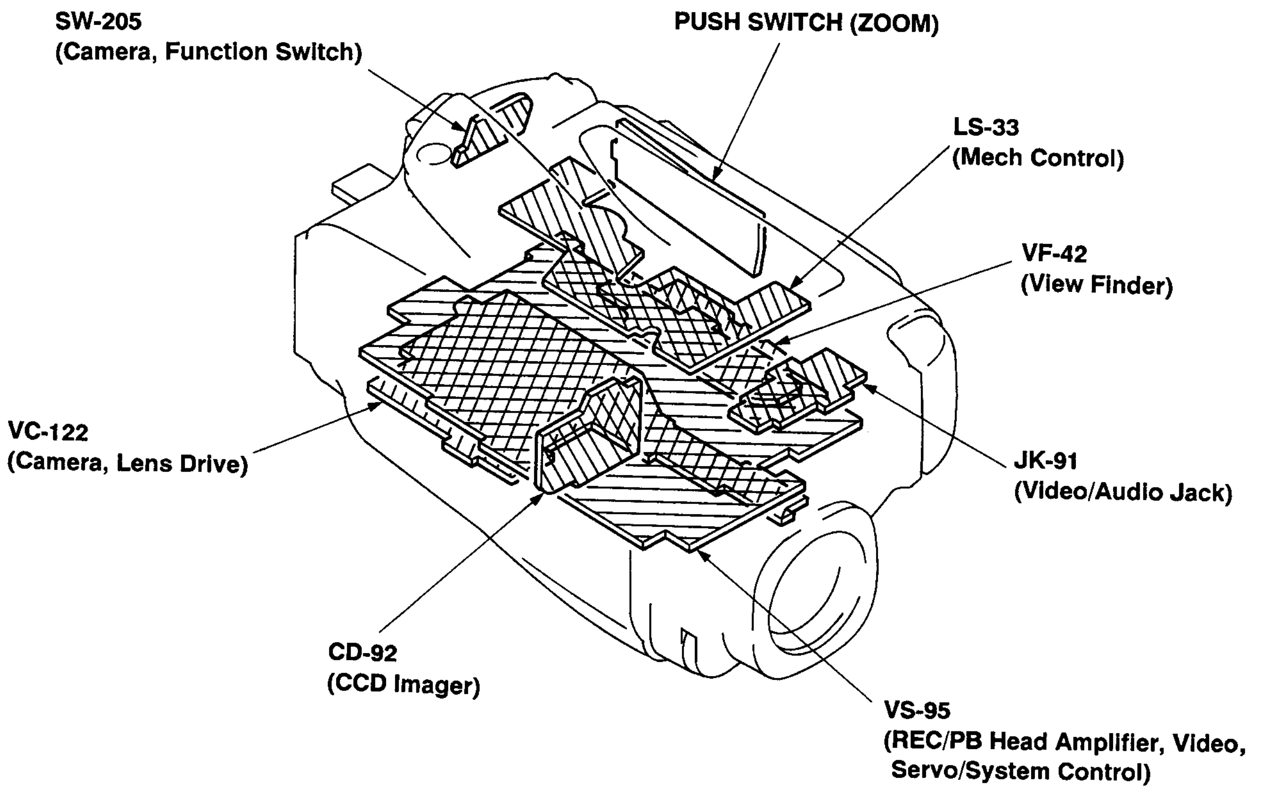
M904
IRIS meter assembly
3-708-494-01

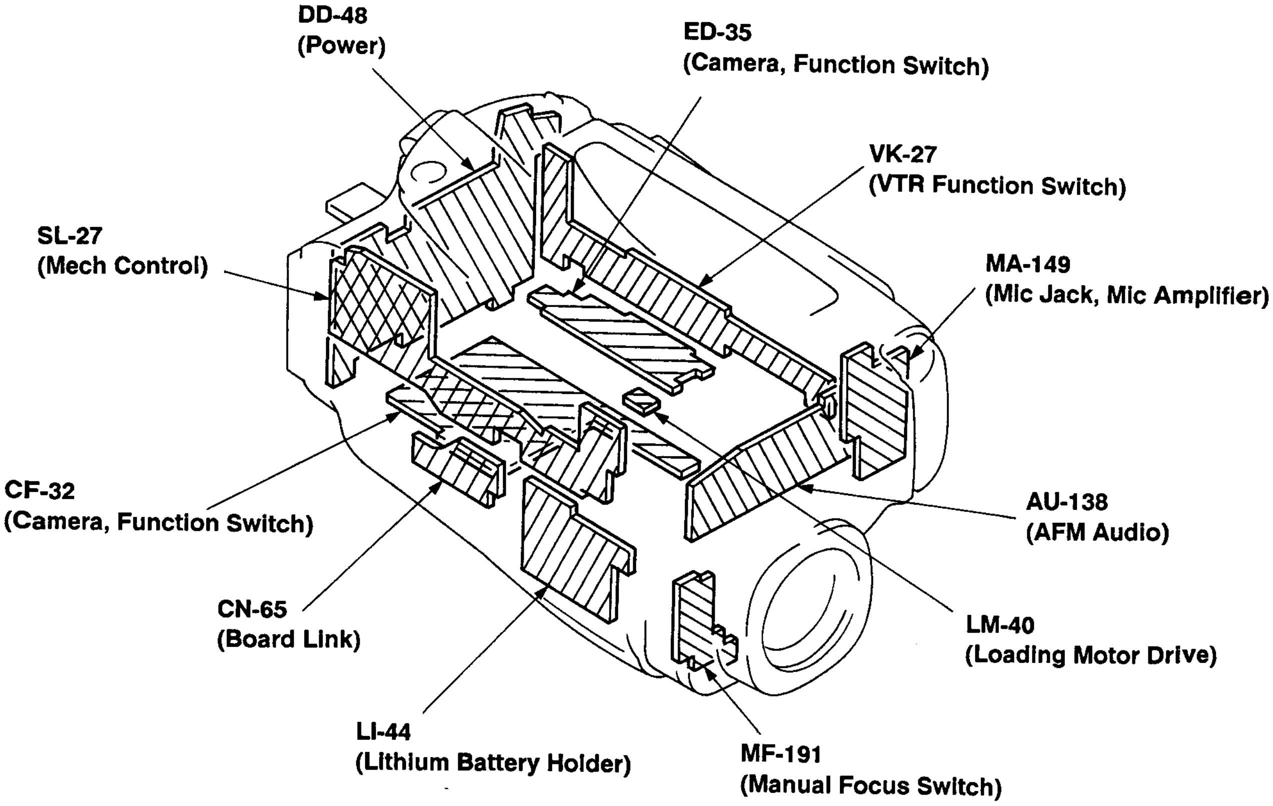
M906
Zoom motor assembly
3-708-492-01

M905
Focus motor assembly
3-708-491-01

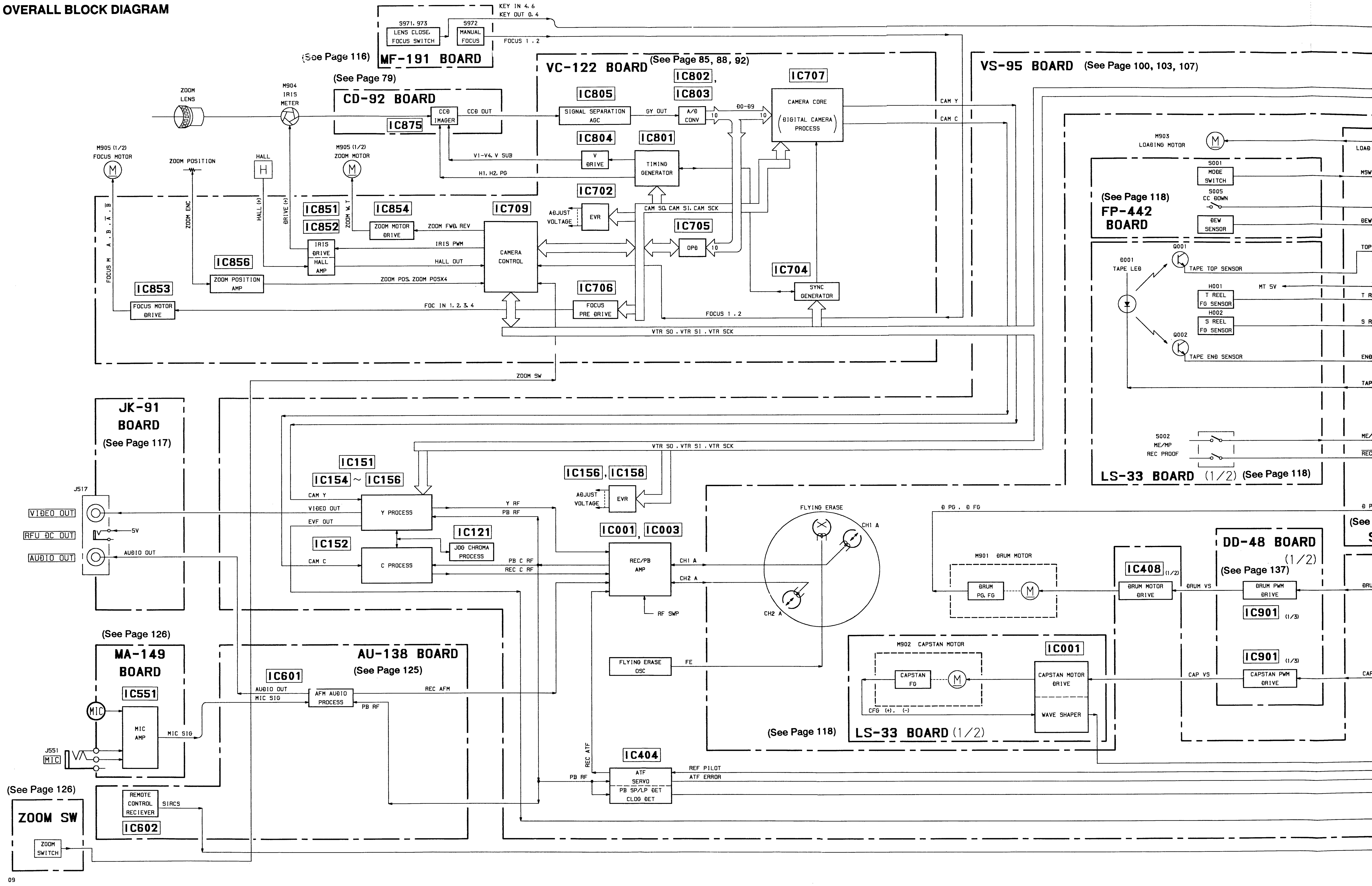
# SECTION 3
# DIAGRAMS

## 3-1. CIRCUIT BOARDS LOCATION

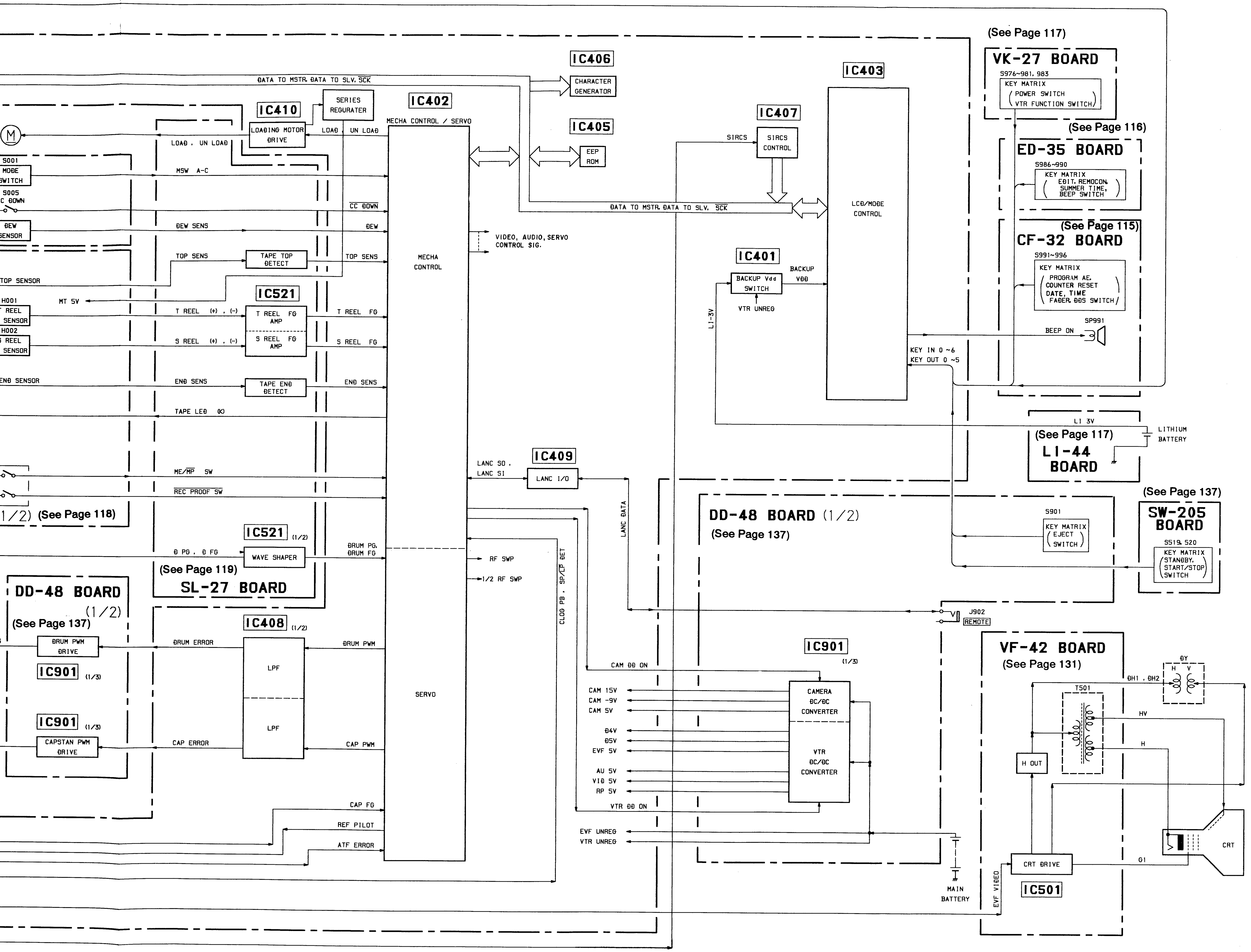

SW-205
(Camera, Function Switch)
PUSH SWITCH (ZOOM)
LS-33
(Mech Control)
VF-42
(View Finder)
VC-122
(Camera, Lens Drive)
JK-91
(Video/Audio Jack)
CD-92
(CCD Imager)
VS-95
(REC/PB Head Amplifier, Video,
Servo/System Control)


DD-48
(Power)
ED-35
(Camera, Function Switch)
VK-27
(VTR Function Switch)
SL-27
(Mech Control)
MA-149
(Mic Jack, Mic Amplifier)
CF-32
(Camera, Function Switch)
AU-138
(AFM Audio)
CN-65
(Board Link)
LM-40
(Loading Motor Drive)
LI-44
(Lithium Battery Holder)
MF-191
(Manual Focus Switch)

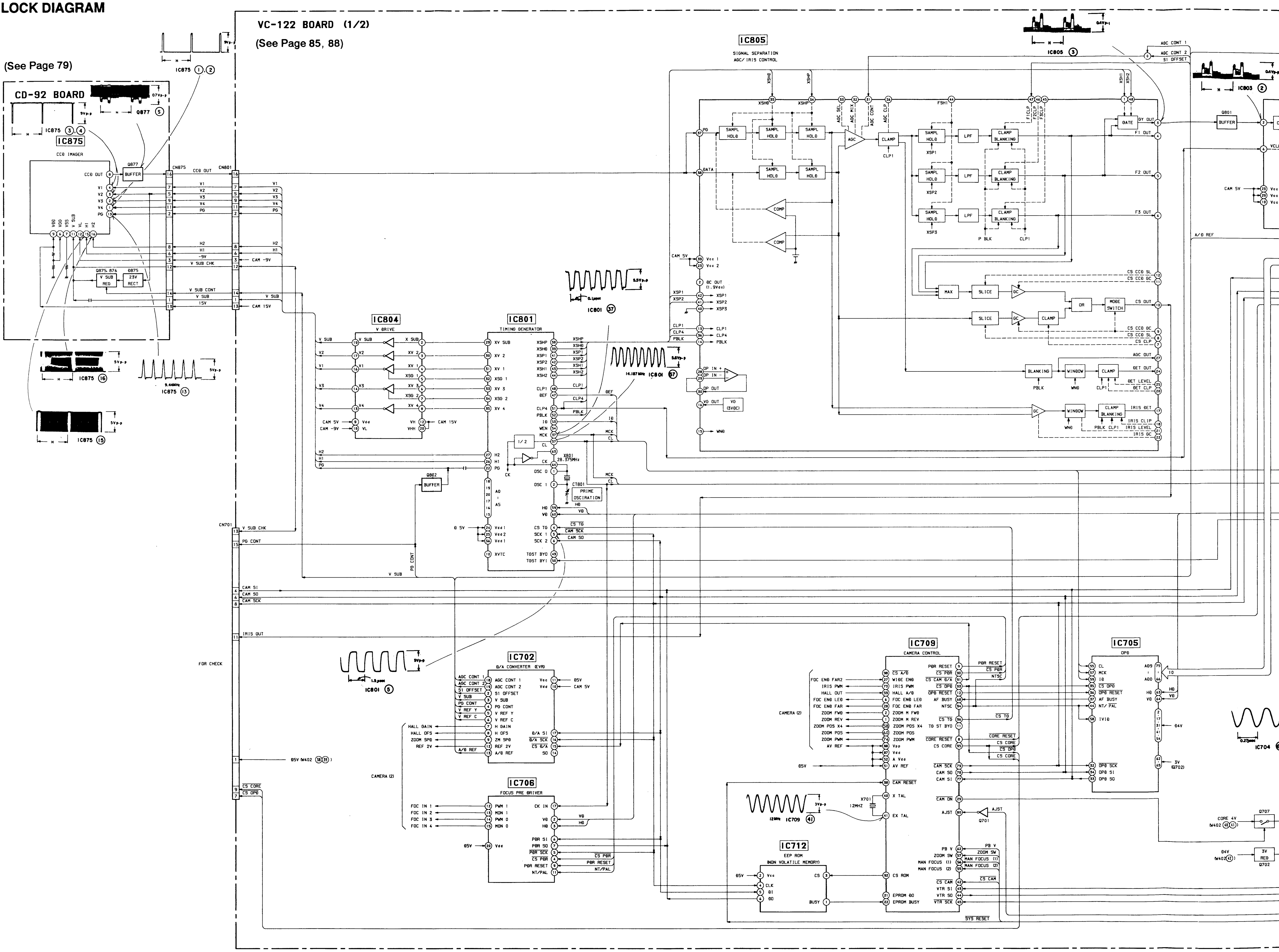
## 3-2. OVERALL BLOCK DIAGRAM

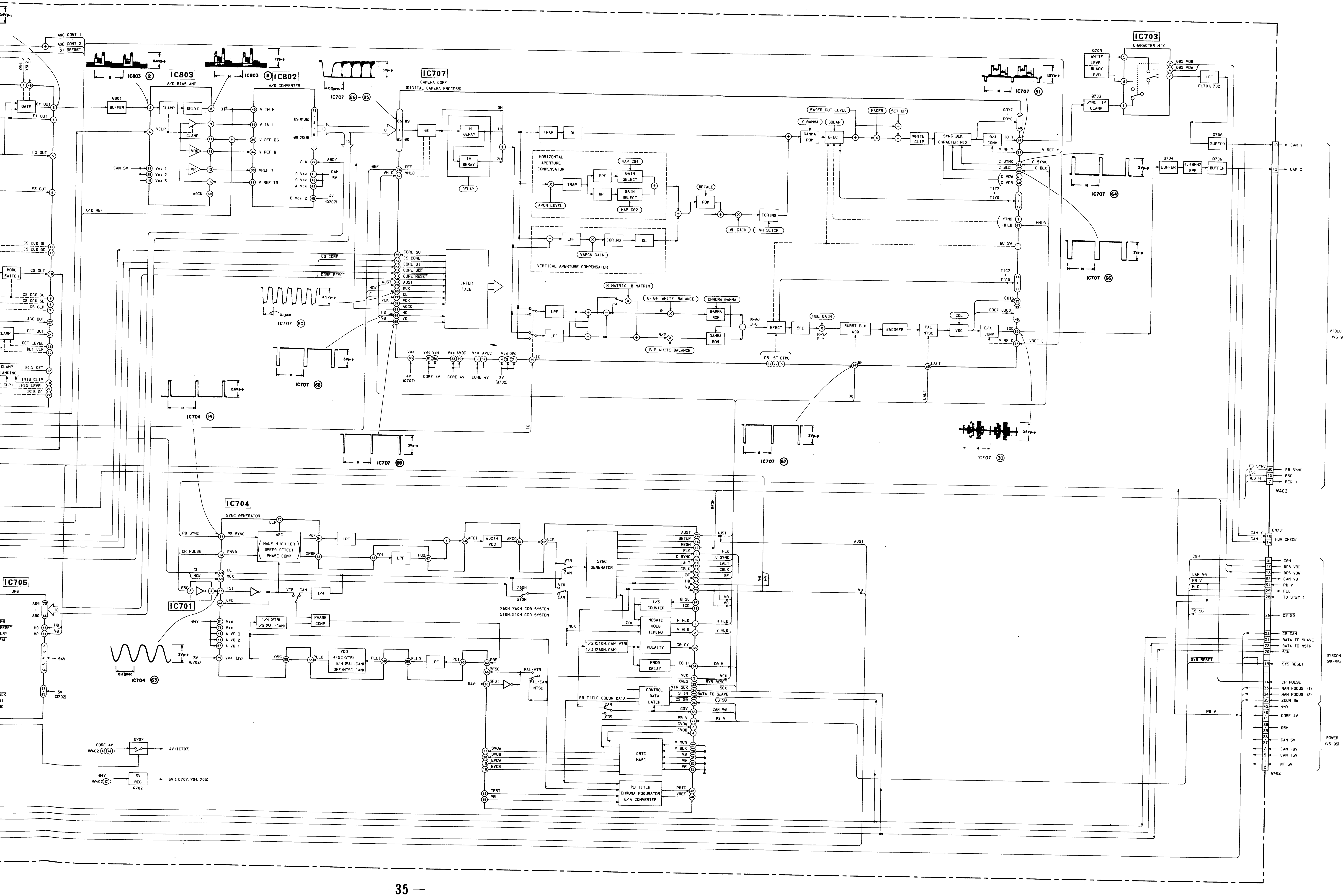


MF-191 BOARD
(See Page 116)
S971, 973 LENS CLOSE, FOCUS SWITCH
S972 MANUAL FOCUS
KEY IN 4, 6
KEY OUT 0, 4
FOCUS 1, 2
CD-92 BOARD
(See Page 79)
IC875
CCD IMAGER
CCD OUT
ZOOM LENS
M904 IRIS METER
M905 (1/2) FOCUS MOTOR
ZOOM POSITION
HALL
M905 (1/2) ZOOM MOTOR
VC-122 BOARD
(See Page 85, 88, 92)
IC805
SIGNAL SEPARATION AGC
GY OUT
IC802, IC803
A/D CONV
D0-D9
10
IC707
CAMERA CORE (DIGITAL CAMERA PROCESS)
CAM Y
CAM C
IC804
V DRIVE
IC801
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
IC702
EVR
ADJUST VOLTAGE
CAM SO, CAM SI, CAM SCK
IC705
OPΦ
IC704
SYNC GENERATOR
IC709
CAMERA CONTROL
IC851
IC852
IRIS DRIVE HALL AMP
IC854
ZOOM MOTOR DRIVE
ZOOM FWD, REV
IRIS PWM
HALL OUT
IC856
ZOOM POSITION AMP
ZOOM POS, ZOOM POSX4
IC853
FOCUS MOTOR DRIVE
FOC IN 1, 2, 3, 4
IC706
FOCUS PRE DRIVE
FOCUS 1, 2
FOCUS M A, B, Ā, B̄
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM W, T
VTR SO, VTR SI, VTR SCK
ZOOM SW
VS-95 BOARD (See Page 100, 103, 107)
M903 LOADING MOTOR
FP-442 BOARD
(See Page 118)
S001 MODE SWITCH
S005 CC DOWN
DEW SENSOR
D001 TAPE LED
Q001 TAPE TOP SENSOR
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
MT 5V
Q002 TAPE END SENSOR
S002 ME/MP REC PROOF
LS-33 BOARD (1/2) (See Page 118)
JK-91 BOARD
(See Page 117)
J517
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
AUDIO OUT
IC151
IC154 ~ IC156
Y PROCESS
CAM Y
VIDEO OUT
EVF OUT
Y RF
PB RF
IC152
C PROCESS
CAM C
IC121
JOG CHROMA PROCESS
PB C RF
REC C RF
IC156, IC158
EVR
ADJUST VOLTAGE
IC001, IC003
REC/PB AMP
RF SWP
CH1 A
CH2 A
FLYING ERASE
FLYING ERASE OSC
FE
D PG, D FG
M901 DRUM MOTOR
DRUM PG, FG
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM VS
DD-48 BOARD (1/2)
(See Page 137)
DRUM PWM DRIVE
IC901 (1/3)
IC901 (1/3)
CAPSTAN PWM DRIVE
CAP VS
M902 CAPSTAN MOTOR
CAPSTAN FG
CFG (+), (-)
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
LS-33 BOARD (1/2)
(See Page 118)
MA-149 BOARD
(See Page 126)
IC551
MIC AMP
MIC
J551 MIC
MIC SIG
AU-138 BOARD
(See Page 125)
IC601
AFM AUDIO PROCESS
AUDIO OUT
MIC SIG
REC AFM
PB RF
IC404
ATF SERVO
PB SP/LP DET
CLOG DET
REC ATF
REF PILOT
ATF ERROR
REMOTE CONTROL RECIEVER
SIRCS
IC602
ZOOM SW
(See Page 126)
ZOOM SWITCH
LOAD
MSW
DEW
TOP
T R
S R
END
TAP
ME/
REC
D P
(See
DRU
CAP
09


IC406
CHARACTER GENERATOR
IC405
EEP ROM
IC403
LCD/MODE CONTROL
IC407
SIRCS CONTROL
SIRCS
IC401
BACKUP Vdd SWITCH
BACKUP VDD
VTR UNREG
LI-3V
KEY IN 0 ~6
KEY OUT 0 ~5
DATA TO MSTR, DATA TO SLV, SCK
IC410
LOADING MOTOR DRIVE
SERIES REGURATER
IC402
MECHA CONTROL / SERVO
MECHA CONTROL
SERVO
LOAD , UN LOAD
MSW A-C
CC DOWN
DEW SENS
DEW
TOP SENS
TAPE TOP DETECT
IC521
T REEL (+) , (-)
T REEL FG AMP
S REEL (+) , (-)
S REEL FG AMP
T REEL FG
S REEL FG
END SENS
TAPE END DETECT
TAPE LED (K)
ME/MP SW
REC PROOF SW
D PG , D FG
IC521 (1/2)
WAVE SHAPER
DRUM PG, DRUM FG
(See Page 119)
SL-27 BOARD
VIDEO, AUDIO, SERVO CONTROL SIG.
S001 MODE SWITCH
S005 CC DOWN
DEW SENSOR
TOP SENSOR
H001 T REEL SENSOR
H002 S REEL SENSOR
MT 5V
END SENSOR
(1/2) (See Page 118)
DD-48 BOARD (1/2)
(See Page 137)
DRUM PWM DRIVE
IC901 (1/3)
IC901 (1/3)
CAPSTAN PWM DRIVE
IC408 (1/2)
LPF
LPF
DRUM ERROR
DRUM PWM
CAP ERROR
CAP PWM
CAP FG
REF PILOT
ATF ERROR
LANC SO , LANC SI
IC409
LANC I/O
LANC DATA
RF SWP
1/2 RF SWP
CLOG PB , SP/LP DET
(See Page 117)
VK-27 BOARD
S976~981, 983
KEY MATRIX (POWER SWITCH VTR FUNCTION SWITCH)
(See Page 116)
ED-35 BOARD
S986~990
KEY MATRIX (EDIT, REMOCON, SUMMER TIME, BEEP SWITCH)
(See Page 115)
CF-32 BOARD
S991~996
KEY MATRIX (PROGRAM AE, COUNTER RESET DATE, TIME FADER, DDS SWITCH)
SP991
BEEP ON
LI 3V
(See Page 117)
LI-44 BOARD
LITHIUM BATTERY
DD-48 BOARD (1/2)
(See Page 137)
S901
KEY MATRIX (EJECT SWITCH)
(See Page 137)
SW-205 BOARD
S519, 520
KEY MATRIX (STANDBY, START/STOP SWITCH)
J902 REMOTE
IC901 (1/3)
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
CAM DD ON
CAM 15V
CAM -9V
CAM 5V
D4V
D5V
EVF 5V
AU 5V
VID 5V
RP 5V
VTR DD ON
EVF UNREG
VTR UNREG
MAIN BATTERY
VF-42 BOARD
(See Page 131)
DY
H V
DH1 , DH2
T501
HV
H
H OUT
CRT DRIVE
IC501
G1
CRT
EVF VIDEO

## 3-3. CAMERA (1) BLOCK DIAGRAM


(See Page 79)
CD-92 BOARD
IC875
CCD IMAGER
Q877
BUFFER
CCD OUT
V1
V2
V3
V4
PG
Q875, 876
V SUB REG
Q875
23V RECT
CN875
CN801
V SUB CHK
V SUB CONT
CAM -9V
CAM 15V
IC875 ①,②
IC875 ③,④
Q877 ⑤
IC875 ⑯
IC875 ⑬
IC875 ⑮
VC-122 BOARD (1/2)
(See Page 85, 88)
IC805
SIGNAL SEPARATION
AGC/IRIS CONTROL
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
COMP
MAX
SLICE
GC
OR
MODE SWITCH
BLANKING
WINDOW
GATE
IC805 ③
IC803 ②
Q801
BUFFER
IC804
V DRIVE
IC801
TIMING GENERATOR
X801
28.375MHz
CT801
PRIME OSCIRATION
Q802
BUFFER
IC801 ㊲
IC801 ⑤
CN701
FOR CHECK
IRIS OUT
CAM SI
CAM SO
CAM SCK
IC702
D/A CONVERTER (EVR)
IC706
FOCUS PRE DRIVER
IC709
CAMERA CONTROL
X701
12MHZ
IC709 ㊶
IC712
EEP ROM
(NON VOLATILE MEMORY)
IC705
OPD
Q701
Q707
Q702
CAMERA (2)
IC704



IC803
A/D BIAS AMP
IC802
A/D CONVERTER
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC703
CHARACTER MIX
IC704
SYNC GENERATOR
IC701
IC705
Q801 BUFFER
CLAMP
DRIVE
V IN H
V IN L
V REF BS
V REF B
VREF T
V REF TS
CLK
ADCK
CAM 5V
AGC CONT 1
AGC CONT 2
S1 OFFSET
A/D REF
GATE
F1 OUT
F2 OUT
F3 OUT
MODE SWITCH
CS OUT
CS CORE
CORE RESET
CORE SO
CORE SI
CORE SCK
AJST
MCK
CL
VCK
ADCK
HD
VD
INTER FACE
1H DELAY
DE
TRAP
DL
HORIZONTAL APERTURE COMPENSATOR
APCN LEVEL
HAP CG1
HAP CG2
BPF
GAIN SELECT
VERTICAL APERTURE COMPENSATOR
LPF
CORING
VAPCN GAIN
DETALE ROM
VH GAIN
VH SLICE
Y GAMMA
GAMMA ROM
SOLAR
EFECT
FADER OUT LEVEL
FADER
SET UP
WHITE CLIP
SYNC BLK CHARACTER MIX
D/A CONV
R MATRIX B MATRIX
G/Gb WHITE BALANCE
R/B WHITE BALANCE
CHROMA GAMMA
HUE GAIN
BURST BLK ADD
ENCODER
PAL NTSC
CDL
VBC
SFC
R-G/B-G
R-Y/B-Y
Q709 WHITE LEVEL BLACK LEVEL
Q703 SYNC-TIP CLAMP
FL701, 702
Q708 BUFFER
Q704 BUFFER
4.43MHZ BPF
Q706 BUFFER
CAM Y
CAM C
VIDEO (1) (VS-95)
PB SYNC
FSC
REG H
W402
CN701
FOR CHECK
CGH
DDS VDB
DDS VDW
CAM VD
PB V
FLD
TO STBY 1
CS SG
CS CAM
DATA TO SLAVE
DATA TO MSTR
SCK
SYS RESET
SYSCON (VS-95)
CR PULSE
MAN FOCUS (1)
MAN FOCUS (2)
ZOOM SW
D4V
CORE 4V
D5V
CAM 5V
CAM -9V
CAM 15V
MT 5V
POWER (VS-95)
AFC
HALF H KILLER
SPEED DETECT
PHASE COMP
ENVD
602fH VCO
SYNC GENERATOR
1/3 COUNTER
MOSAIC HOLD TIMING
POLARITY
PROG DELAY
CONTROL DATA LATCH
CRTC MASC
PB TITLE CHROMA MODURATOR D/A CONVERTER
PB TITLE COLOR DATA
VCO 4FSC (VTR) 5/4 (PAL.CAM) OFF (NTSC.CAM)
1/4 (VTR) 1/5 (PAL.CAM)
1/2 (510H.CAM VTR) 1/3 (760H.CAM)
760H:760H CCD SYSTEM
510H:510H CCD SYSTEM
PLLO
PLLI
PDI
PDP
VARI
Q707 CORE 4V
4V (IC707)
Q702 3V REG
3V (IC707, 704, 705)
IC803 (2)
IC803 (8)
IC707 (86)-(95)
IC707 (51)
IC707 (64)
IC707 (66)
IC707 (80)
IC707 (68)
IC707 (69)
IC707 (67)
IC707 (30)
IC704 (14)
IC704 (63)

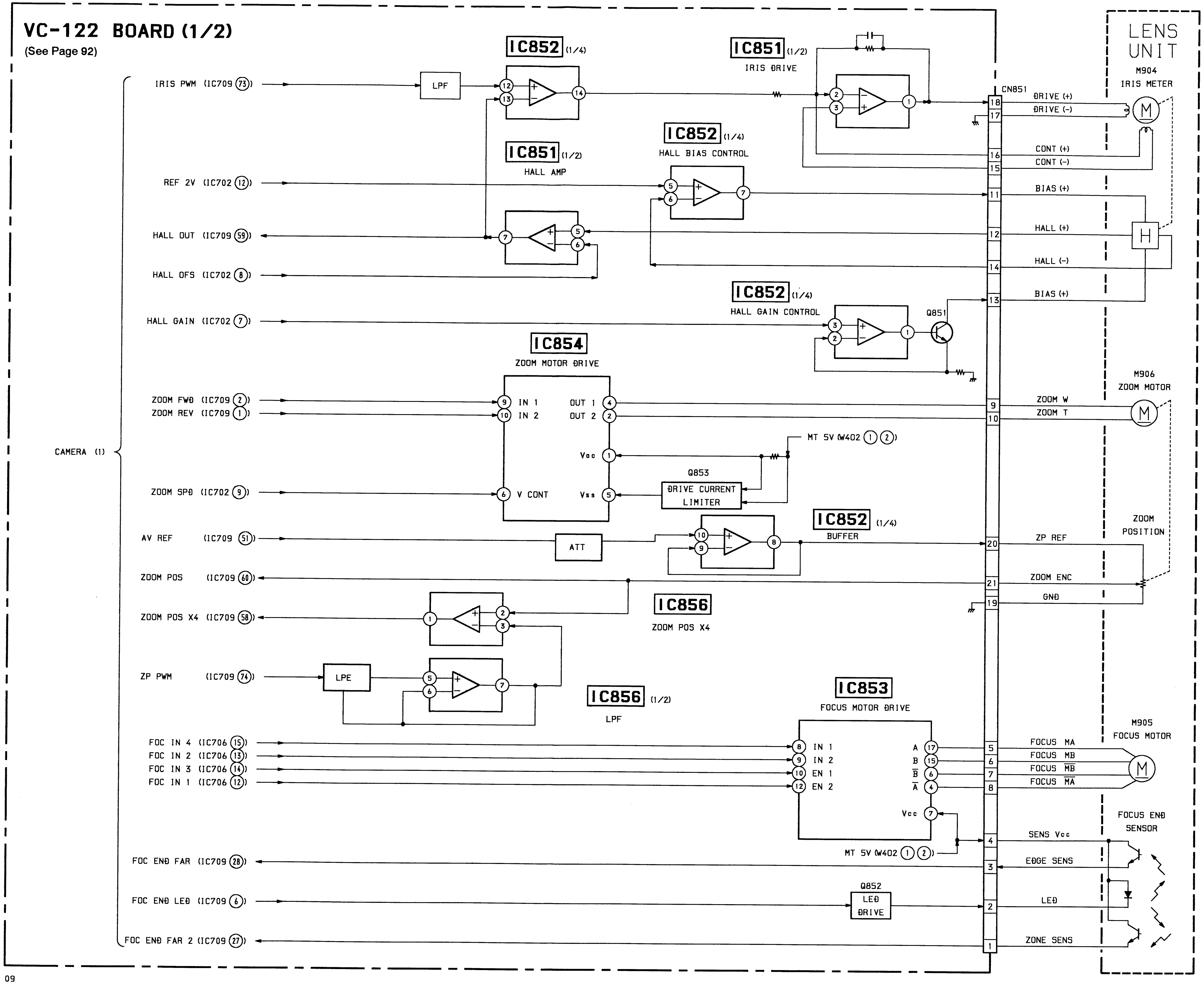
### 3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-122 BOARD: CXP80624-424R/434R)

| Pin No. | Signal | I/O | Function |
|---|---|---|---|
| 1 | ZOOM M REV | O | Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to WIDE. "H" when rotating to TELE. |
| 2 | ZOOM M FWD | O | Zoom motor control signal. Normally "L". 20 msec period PWM signal when rotating to TELE. "H" when rotating to WIDE. |
| 3 | | | Not used. |
| 4 | | | |
| 5 | | | |
| 6 | FOC END LED | O | Focus end sensor LED control signal. Normally "L". |
| 7 | RT05/D5 | | Not used. |
| 8 | $\overline{\text{CORE RESET}}$ | O | Camera core (IC707 on VC-122 board) reset signal. Normally "H". "L" when reset. |
| 9 | PDR RESET | O | Focus predriver (IC706 on VC-122 board) reset signal. Normally "H". "L" when reset. |
| 10 | | | Not used. |
| 11 | TG STBY0 | | |
| 12 | OPD RESET | O | OPD (IC705 on VC-122 board) reset signal. "H": camera mode. "L": VTR mode. |
| 13 | | | Not used. |
| 14 | | | |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| 21 | EPROM DO | O | Connected to +5V. |
| 22 | EPROM BUSY | I | BUSY signal from EEPROM. Normally "H". "L" pulse when data reading/writing. |
| 23 | | | Not used. |
| 24 | | | |
| 25 | | | Connected to GND. |
| 26 | | | Connected to +5V. |
| 27 | WIDE END | | Focus Zone sensor input. Normally "L". |
| 28 | FOC END FAR | I | Focus edge sensor input. Normally "L". |
| 29 | $\overline{\text{CAM ON}}$ | O | Power supply control signal. Normally "L". |
| 30 | | | Not used. |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | | |
| 35 | | | |
| 36 | | | |
| 37 | MP | | Connected to GND. |
| 38 | $\overline{\text{CAM RESET}}$ | I | Reset signal input. Normally "H". "L" when reset. |
| 39 | VSS | | GND |
| 40 | XTAL | O | 12 MHz clock oscillation circuit. |
| 41 | EXTAL | I | |
| 42 | $\overline{\text{CS CAM}}$ | I | Chip select signal from mode control microprocessor. (IC403 on VS-95 board) |
| 43 | VTR SI | I | Serial data input from mode control microprocessor. |
| 44 | VTR SO | O | Serial data output from mode control microprocessor. |
| 45 | VTR SCK | I | Serial data transfer clock. |
| 46 | | | Not used. |
| 47 | | | |
| 48 | | | |
| 49 | | | Not used. |
| 50 | AVSS | | GND |
| 51 | AVREF | | Analog input port reference voltage (5V). |
| 52 | AVDD | | Analog input port voltage (5V). |
| 53 | | | Connected to GND. |
| 54 | | | |
| 55 | MAN FOCUS (2) | I | Manual focus input. 0 to 5 Vdc. |
| 56 | MAN FOCUS (1) | I | Manual focus input. 0 to 5 Vdc. |
| 57 | ZOOM SW | I | Zoom key input. 0.4V: F. TELE, 1.4V: TELE and 3.7V: F. WIDE, 2.5V: WIDE and 5V: no input. |
| 58 | ZOOM POS X4 | I | Zoom position voltage. approx. 0.4V (WIDE end) to approx. 2.8V (TELE end). |
| 59 | HALL A/D | I | Hall voltage. approx. 1V (iris open) to approx. 3V (iris close). |
| 60 | ZOOM POS | I | Zoom position voltage. approx. 0.2V (WIDE end) to approx. 2.4V (TELE end). |
| 61 | | | Connected to 5V. |
| 62 | PB V | I | VD signal input from mecha controler (IC402 on VS-95 board). |
| 63 | PG5/SYNC1 | | Connected to +5V. |
| 64 | VTR SYNC | | |
| 65 | PB CTL | | |
| 66 | DPG | | |
| 67 | | | |
| 68 | AF BUSY | I | AF busy signal. |
| 69 | | | Not used. |
| 70 | | | |
| 71 | | | |
| 72 | | | |
| 73 | IRIS PWM | O | Iris control signal. 21 μsec period PWM signal. |
| 74 | ZM PWM | O | Zoom position detection voltage output. 21 μsec period PWM signal. |
| 75 | | | Not used. |
| 76 | | | Connected to +5V. |
| 77 | CAM SI | I | Serial data input. |
| 78 | CAM SO | O | Serial data output. |
| 79 | $\overline{\text{CAM SCK}}$ | O | Serial data transfer clock. |
| 80 | AJST | I | Adjustment timing pulse input. Normally "H". |
| 81 | PI/TO | | Not used. |
| 82 | PI/PWM | | |
| 83 | PI/PO | | |
| 84 | PI O | | Connected to +5V. |
| 85 | PKO | | |
| 86 | GND | | GND |
| 87 | VDD | | +5V power supply. |
| 88 | VPP | | |
| 89 | | | Not used. |
| 90 | $\overline{\text{CS PDR}}$ | O | Chip select signal to focus predriver (IC706 on VC-122 board). |
| 91 | $\overline{\text{CS CAM D/A}}$ | O | Chip select signal to camera EVR (IC702 on VC-122 board). |
| 92 | CS ROM | O | Chip select signal to EEPROM (IC712 on VC-122 board). |
| 93 | $\overline{\text{CS OPD}}$ | O | Chip select signal to OPD (IC705 on VC-122 board). |
| 94 | $\overline{\text{NTSC}}$ | O | NTSC: "L", PAL: "H". |
| 95 | $\overline{\text{CS CORE}}$ | O | Chip select signal to camera core (IC707 on VC-122 board). |
| 96 | $\overline{\text{CS TG}}$ | O | Chip select signal to timing generator (IC801 on VC-122 board). |
| 97 | | | Not used. |
| 98 | $\overline{\text{CS A/D}}$ | O | Chip select signal to Zoom position A/D converter. Not used. |
| 99 | | | Not used. |
| 100 | | | |

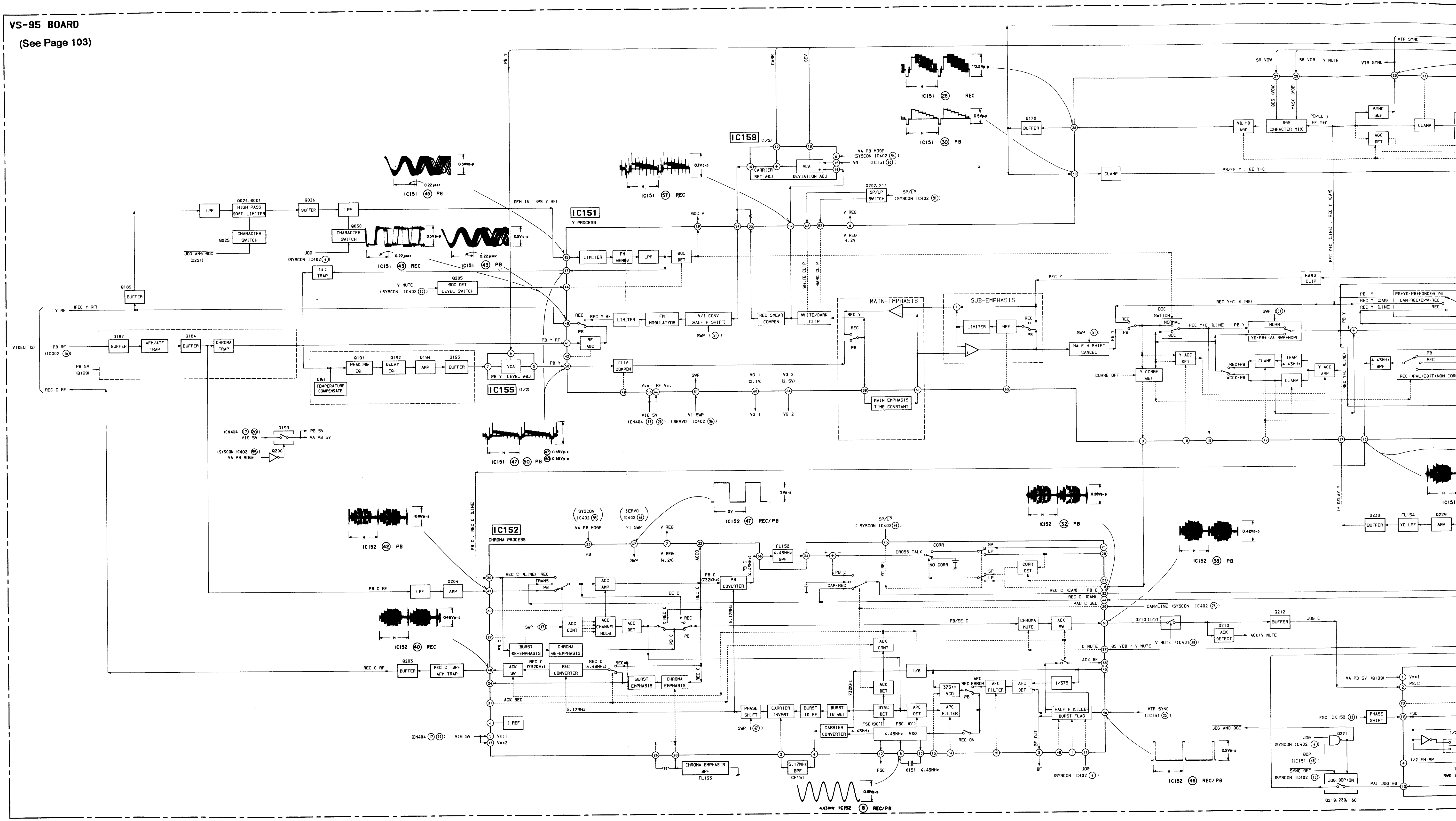
nd 5V: no input.

## 3-5. CAMERA (2) BLOCK DIAGRAM

(See Page 94)

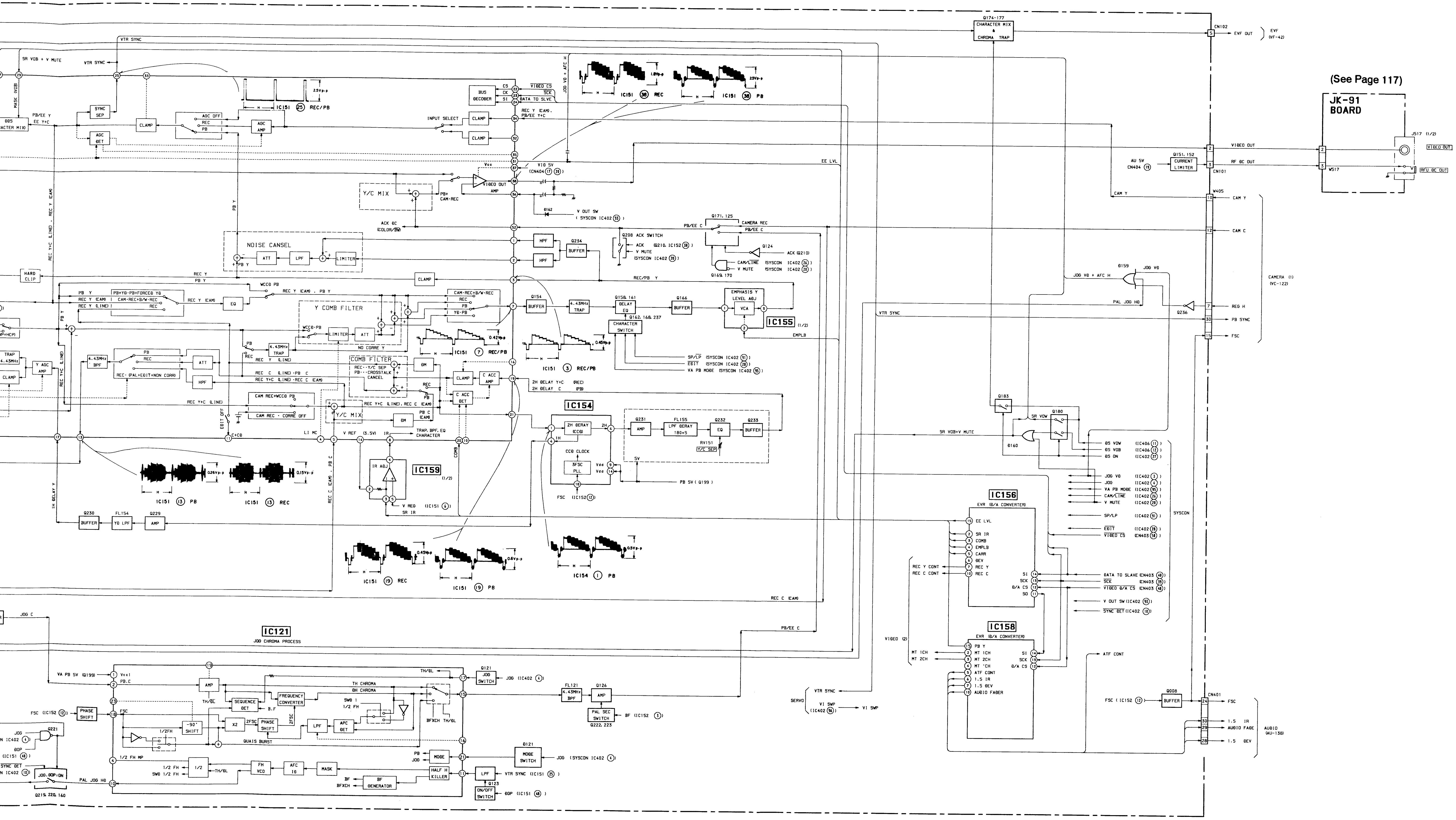

VC-122 BOARD (1/2)
(See Page 92)
CAMERA (1)
IRIS PWM (IC709 (73))
REF 2V (IC702 (12))
HALL OUT (IC709 (59))
HALL OFS (IC702 (8))
HALL GAIN (IC702 (7))
ZOOM FWD (IC709 (2))
ZOOM REV (IC709 (1))
ZOOM SPD (IC702 (9))
AV REF (IC709 (51))
ZOOM POS (IC709 (60))
ZOOM POS X4 (IC709 (58))
ZP PWM (IC709 (74))
FOC IN 4 (IC706 (15))
FOC IN 2 (IC706 (13))
FOC IN 3 (IC706 (14))
FOC IN 1 (IC706 (12))
FOC END FAR (IC709 (28))
FOC END LED (IC709 (6))
FOC END FAR 2 (IC709 (27))
LPF
IC852 (1/4)
IC851 (1/2)
IRIS DRIVE
IC851 (1/2)
HALL AMP
IC852 (1/4)
HALL BIAS CONTROL
IC852 (1/4)
HALL GAIN CONTROL
Q851
IC854
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
MT 5V (W402 (1)(2))
Q853
DRIVE CURRENT LIMITER
IC852 (1/4)
BUFFER
ATT
IC856
ZOOM POS X4
LPE
IC856 (1/2)
LPF
IC853
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
Vcc
MT 5V (W402 (1)(2))
Q852
LED DRIVE
CN851
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
BIAS (+)
HALL (+)
HALL (-)
BIAS (+)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS M̄B̄
FOCUS M̄Ā
SENS Vcc
EDGE SENS
LED
ZONE SENS
LENS UNIT
M904
IRIS METER
M
H
M906
ZOOM MOTOR
ZOOM POSITION
M905
FOCUS MOTOR
FOCUS END SENSOR
09

## 3-6. VIDEO (1) BLOCK DIAGRAM

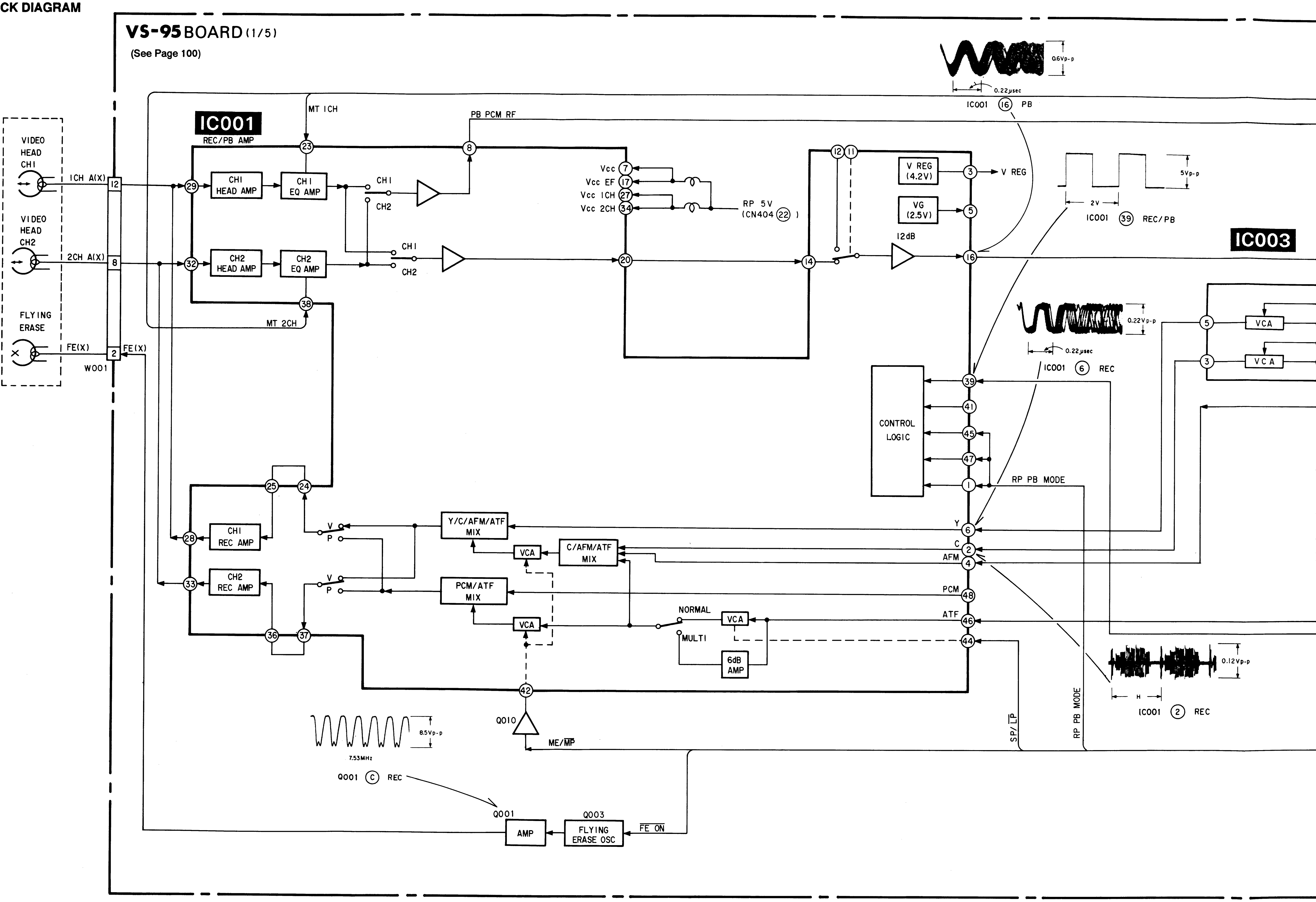

VS-95 BOARD
(See Page 103)
IC151
Y PROCESS
IC152
CHROMA PROCESS
IC155 (1/2)
IC159 (1/2)
MAIN-EMPHASIS
SUB-EMPHASIS
LIMITER
FM DEMOD
LPF
DOC DET
FM MODULATOR
V/I CONV (HALF H SHIFT)
REC SMEAR COMPEN
WHITE/DARK CLIP
CLIP COMPEN
MAIN EMPHASIS TIME CONSTANT
HPF
HALF H SHIFT CANCEL
CARRIER SET ADJ
VCA
DEVIATION ADJ
SP/LP SWITCH
Q024, Q001 HIGH PASS SOFT LIMITER
CHARACTER SWITCH
BUFFER
AFM/ATF TRAP
CHROMA TRAP
PEAKING EQ.
DELAY EQ.
AMP
TEMPERATURE COMPENSATE
fsc TRAP
DOC DET LEVEL SWITCH
PB Y LEVEL ADJ
VIDEO (2)
PB RF
REC C RF
Y RF
PB C RF
ACC AMP
ACC CONT
ACC CHANNEL HOLD
KCC DET
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
ACK SW
REC CONVERTER
BURST EMPHASIS
CHROMA EMPHASIS
PB COVERTER
CROSS TALK
CORR DET
CHROMA MUTE
ACK SW
ACK DETECT
ACK CONT
ACK DET
1/8
375fH VCO
AFC FILTER
AFC DET
1/375
HALF H KILLER BURST FLAG
PHASE SHIFT
CARRIER INVERT
BURST 10 FF
BURST 10 DET
SYNC DET
APC DET
APC FILTER
CARRIER CONVERTER
4.43MHz VXO
I REF
CHROMA EMPHASIS BPF FL153
5.17MHz BPF CF151
FL152 4.43MHz BPF
REC AFM TRAP
Q178 BUFFER
CLAMP
VD HD ADD
DDS (CHRACTER MIX)
SYNC SEP
AGC DET
HARD CLIP
DOC SWITCH
Y AGC DET
Y CORRE DET
Y AGC AMP
TRAP 4.43MHz
4.43MHz BPF
1H DELAY Y
YO LPF
FL154
JOG.BOP:ON
IC151 (45) PB
IC151 (43) REC
IC151 (43) PB
IC151 (57) REC
IC151 (28) REC
IC151 (30) PB
IC151 (47) (50) PB
IC152 (42) PB
IC152 (40) REC
IC152 (47) REC/PB
IC152 (32) PB
IC152 (38) PB
IC152 (46) REC/PB
4.43MHz IC152 (8) REC/PB

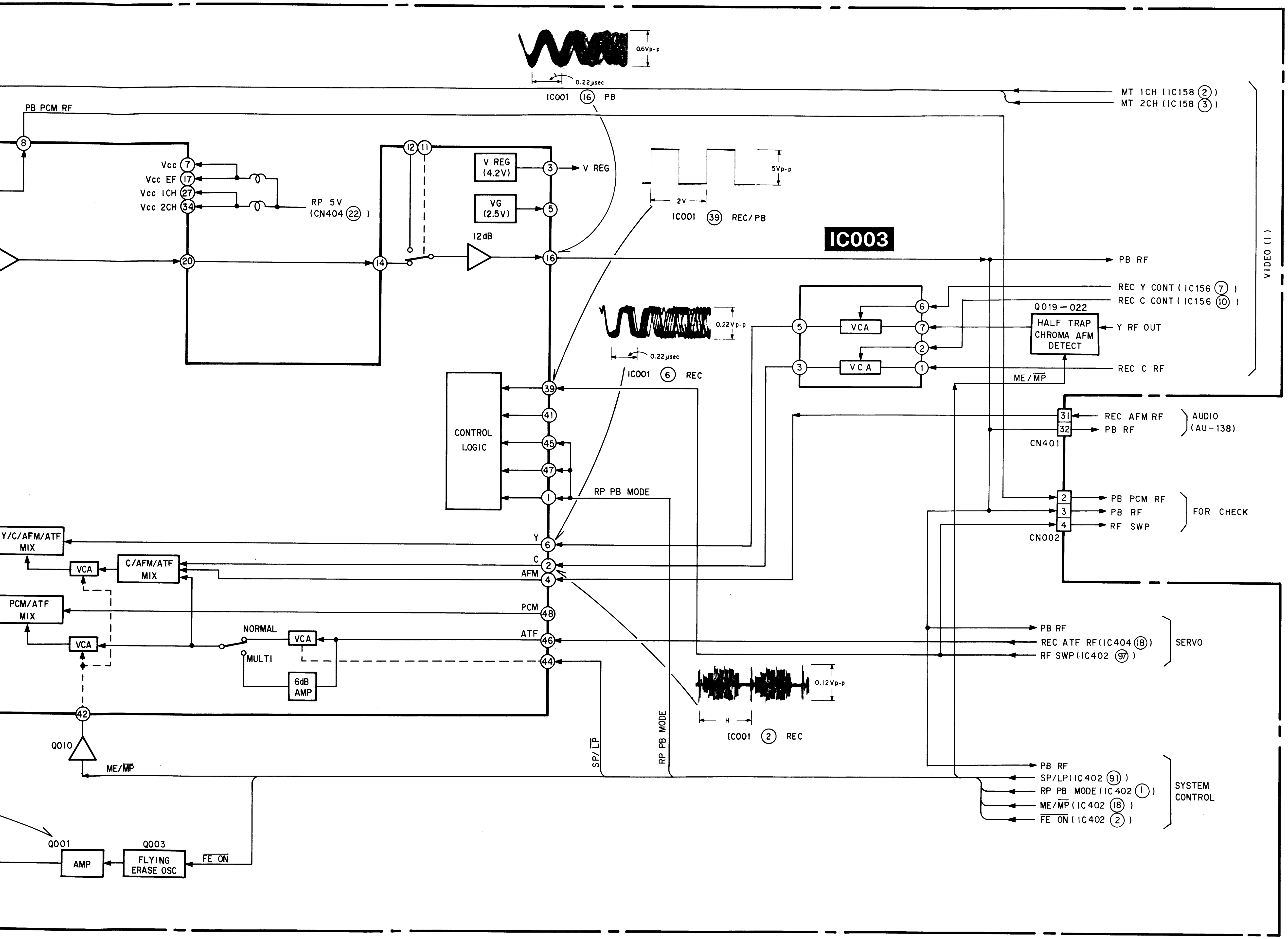
09

(See Page 117)

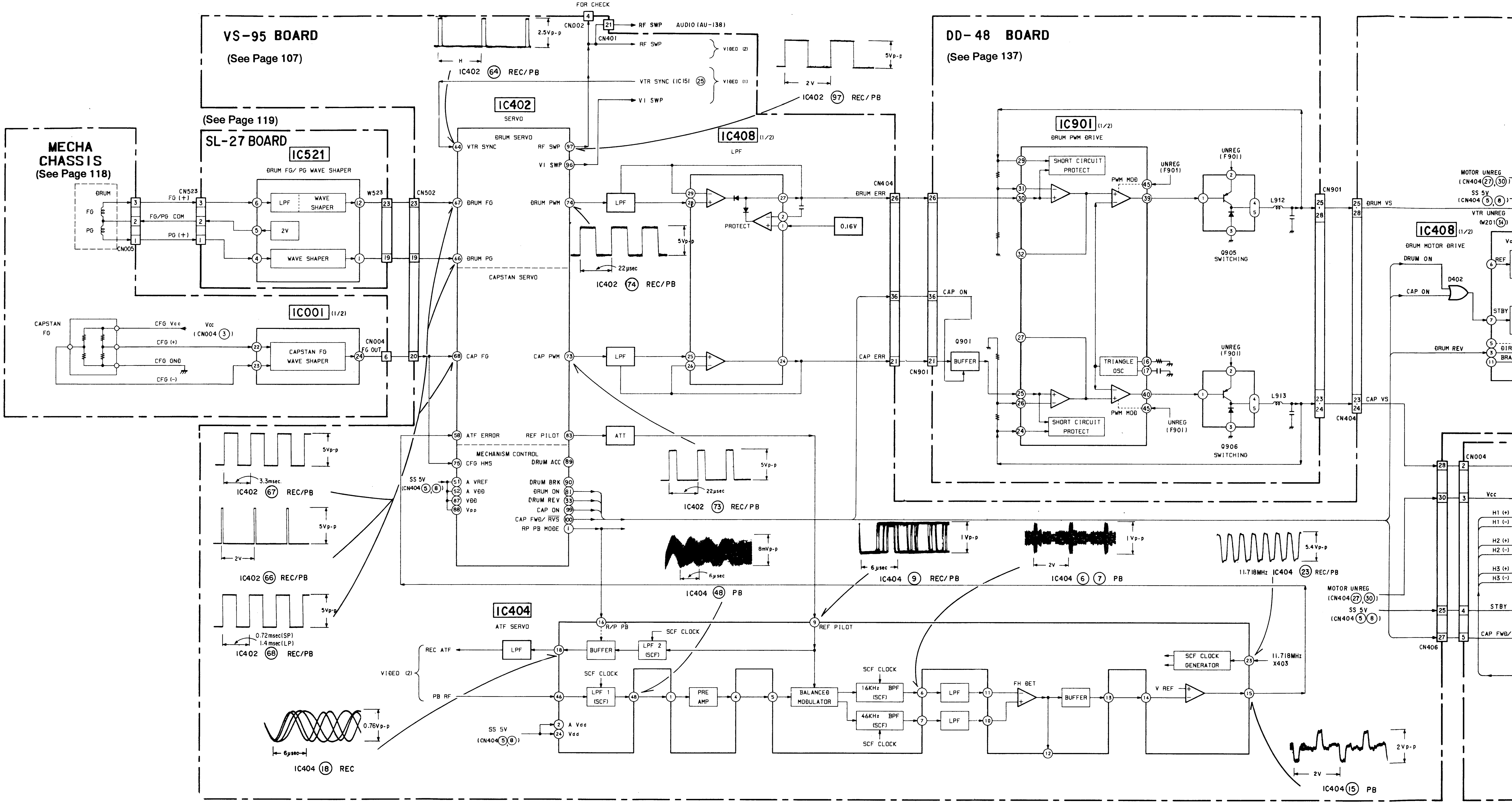

JK-91 BOARD
J517 (1/2)
VIDEO OUT
RFU DC OUT
W517
CN102
EVF OUT
EVF (VF-42)
Q174-177 CHARACTER MIX & CHROMA TRAP
CN101
VIDEO OUT
RF DC OUT
Q151, 152 CURRENT LIMITER
AU 5V CN404 (19)
W405
CAM Y
CAM C
REG H
PB SYNC
FSC
CAMERA (1) (VC-122)
IC121
JOG CHROMA PROCESS
IC151
IC154
IC155 (1/2)
IC156 EVR (D/A CONVERTER)
IC158 EVR (D/A CONVERTER)
IC159 (1/2)
SYNC SEP
AGC DET
CLAMP
AGC AMP
AGC OFF
REC
PB
BUS DECODER
INPUT SELECT
Y/C MIX
VIDEO OUT AMP
NOISE CANSEL
ATT
LPF
LIMITER
HPF
BUFFER
Y COMB FILTER
COMB FILTER
REC···Y/C SEP
PB···CROSSTALK CANCEL
EMPHASIS Y LEVEL ADJ
VCA
CHARACTER SWITCH
DELAY EQ
4.43MHz TRAP
2H DELAY (CCD)
CCD CLOCK
3FSC PLL
LPF DELAY 180×5
EQ
AMP
C ACC AMP
C ACC DET
DM
IR ADJ
HARD CLIP
Y AGC AMP
4.43MHz BPF
YD LPF
SEQUENCE DET
FREQUENCY CONVERTER
PHASE SHIFT
-90° SHIFT
X2
APC DET
FH VCO
AFC
MASK
HALF H KILLER
BF GENERATOR
MODE
MODE SWITCH
JOG SWITCH
ON/OFF SWITCH
PAL SEC SWITCH
IC151 (25) REC/PB
IC151 (38) REC
IC151 (38) PB
IC151 (7) REC/PB
IC151 (3) REC/PB
IC151 (13) PB
IC151 (13) REC
IC151 (19) REC
IC151 (19) PB
IC154 (1) PB
SYSCON
SERVO
AUDIO (AU-138)
1.5 IR
AUDIO FADE
1.5 DEV
EE LVL
SR IR
COMB
EMPLB
CARR
DEV
REC Y
REC C
DATA TO SLAVE
VIDEO CS
SCK
V OUT SW
SYNC DET
ATF CONT
AUDIO FADER
VTR SYNC
VI SWP

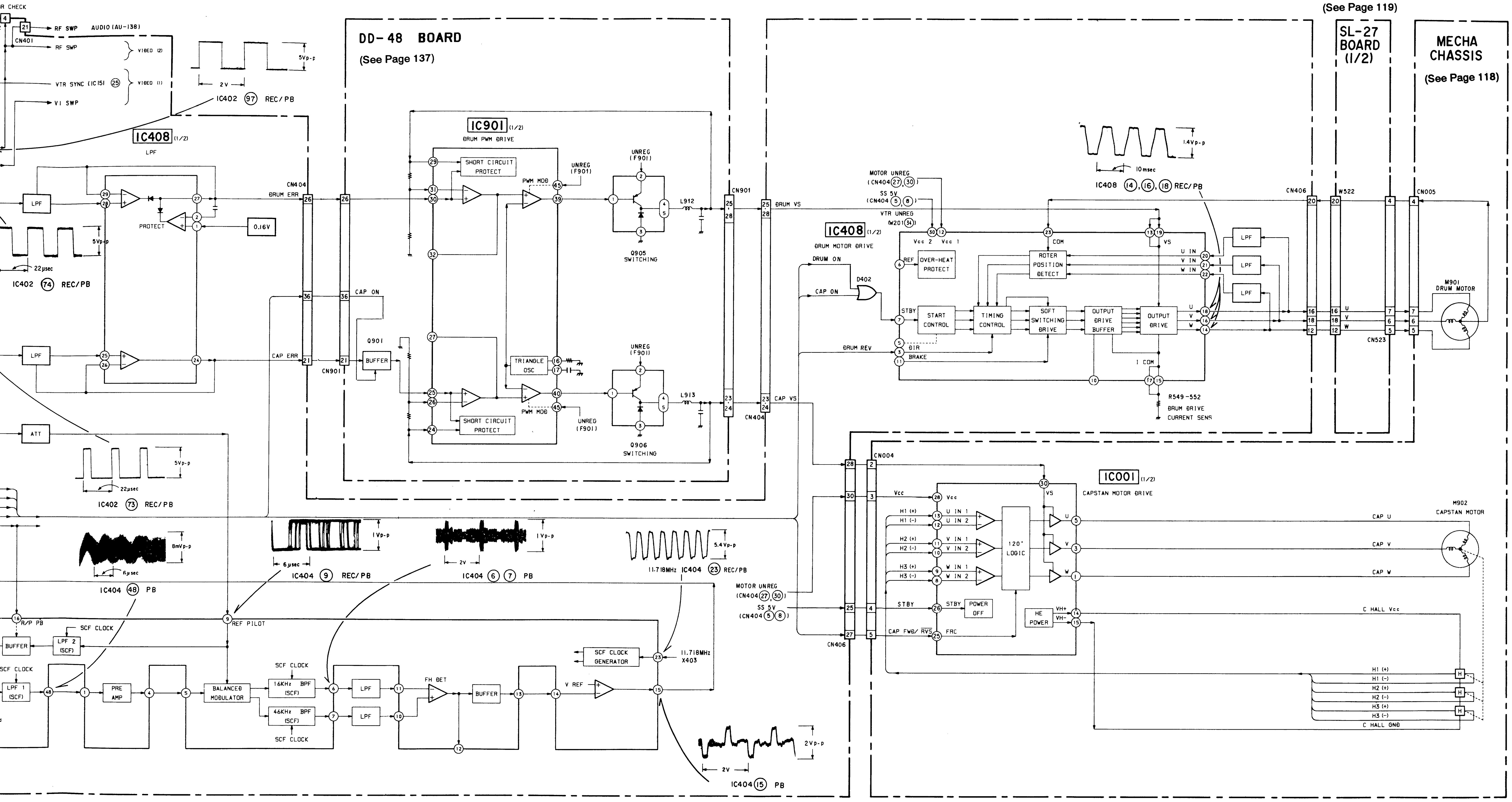
## 3-7. VIDEO (2) BLOCK DIAGRAM


VS-95 BOARD (1/5)
(See Page 100)
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
1CH A(X)
2CH A(X)
FE(X)
W001
12
8
2
IC001
REC/PB AMP
MT 1CH
MT 2CH
PB PCM RF
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
Vcc
Vcc EF
Vcc 1CH
Vcc 2CH
RP 5V
(CN404 ㉒ )
V REG (4.2V)
VG (2.5V)
V REG
12dB
CONTROL LOGIC
RP PB MODE
Y
C
AFM
PCM
ATF
CH1 REC AMP
CH2 REC AMP
V
P
Y/C/AFM/ATF MIX
C/AFM/ATF MIX
PCM/ATF MIX
VCA
NORMAL
MULTI
6dB AMP
Q010
ME/MP
SP/LP
RP PB MODE
Q001
AMP
Q003
FLYING ERASE OSC
FE ON
IC003
0.6Vp-p
0.22μsec
IC001 ⑯ PB
5Vp-p
2V
IC001 ㊴ REC/PB
0.22Vp-p
0.22μsec
IC001 ⑥ REC
0.12Vp-p
H
IC001 ② REC
8.5Vp-p
7.53MHz
Q001 Ⓒ REC

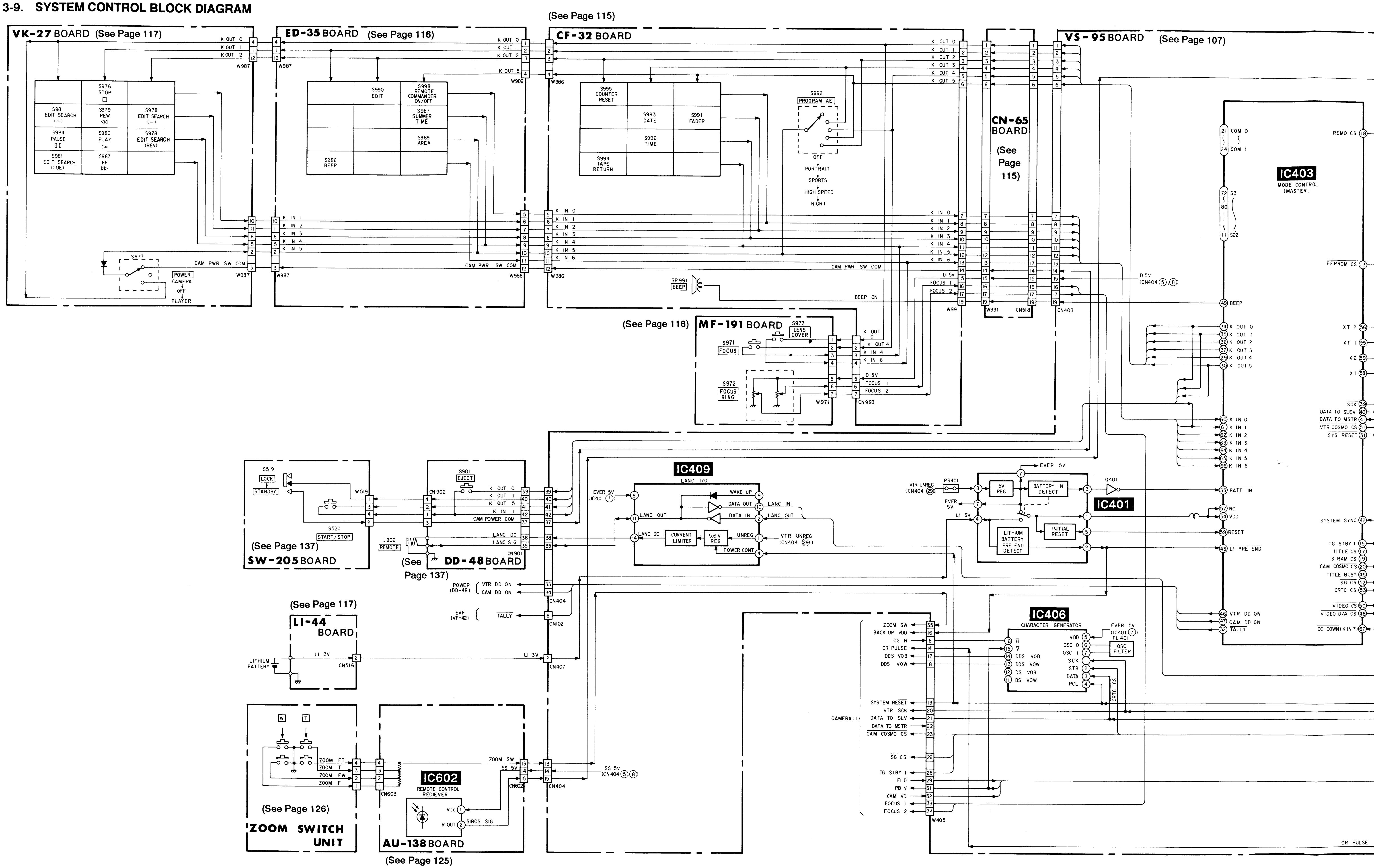

0.6Vp-p
0.22μsec
IC001 ⑯ PB
PB PCM RF
MT 1CH (IC158 ②)
MT 2CH (IC158 ③)
⑧
Vcc ⑦
Vcc EF ⑰
Vcc 1CH ㉗
Vcc 2CH ㉞
RP 5V
(CN404 ㉒)
⑫ ⑪
V REG (4.2V)
③ V REG
VG (2.5V)
⑤
12dB
⑳
⑭
⑯
5Vp-p
2V
IC001 ㊴ REC/PB
IC003
PB RF
REC Y CONT (IC156 ⑦)
REC C CONT (IC156 ⑩)
Q019 — 022
HALF TRAP
CHROMA AFM
DETECT
Y RF OUT
REC C RF
ME/MP
VIDEO (1)
0.22Vp-p
0.22μsec
IC001 ⑥ REC
⑤ VCA ⑦
③ VCA ①
⑥ ②
CONTROL
LOGIC
㊴
㊶
㊺
㊼
①
RP PB MODE
31 REC AFM RF
32 PB RF
CN401
AUDIO
(AU-138)
2 PB PCM RF
3 PB RF
4 RF SWP
CN002
FOR CHECK
Y/C/AFM/ATF
MIX
VCA
C/AFM/ATF
MIX
Y ⑥
C ②
AFM ④
PCM/ATF
MIX
PCM ㊽
ATF ㊻
㊹
NORMAL
MULTI
VCA
6dB
AMP
VCA
0.12Vp-p
H
IC001 ② REC
PB RF
REC ATF RF (IC404 ⑱)
RF SWP (IC402 ⑰)
SERVO
㊷
Q010
ME/MP
SP/LP
RP PB MODE
PB RF
SP/LP (IC402 ㉑)
RP PB MODE (IC402 ①)
ME/MP (IC402 ⑱)
FE ON (IC402 ②)
SYSTEM
CONTROL
Q001
AMP
Q003
FLYING
ERASE OSC
FE ON

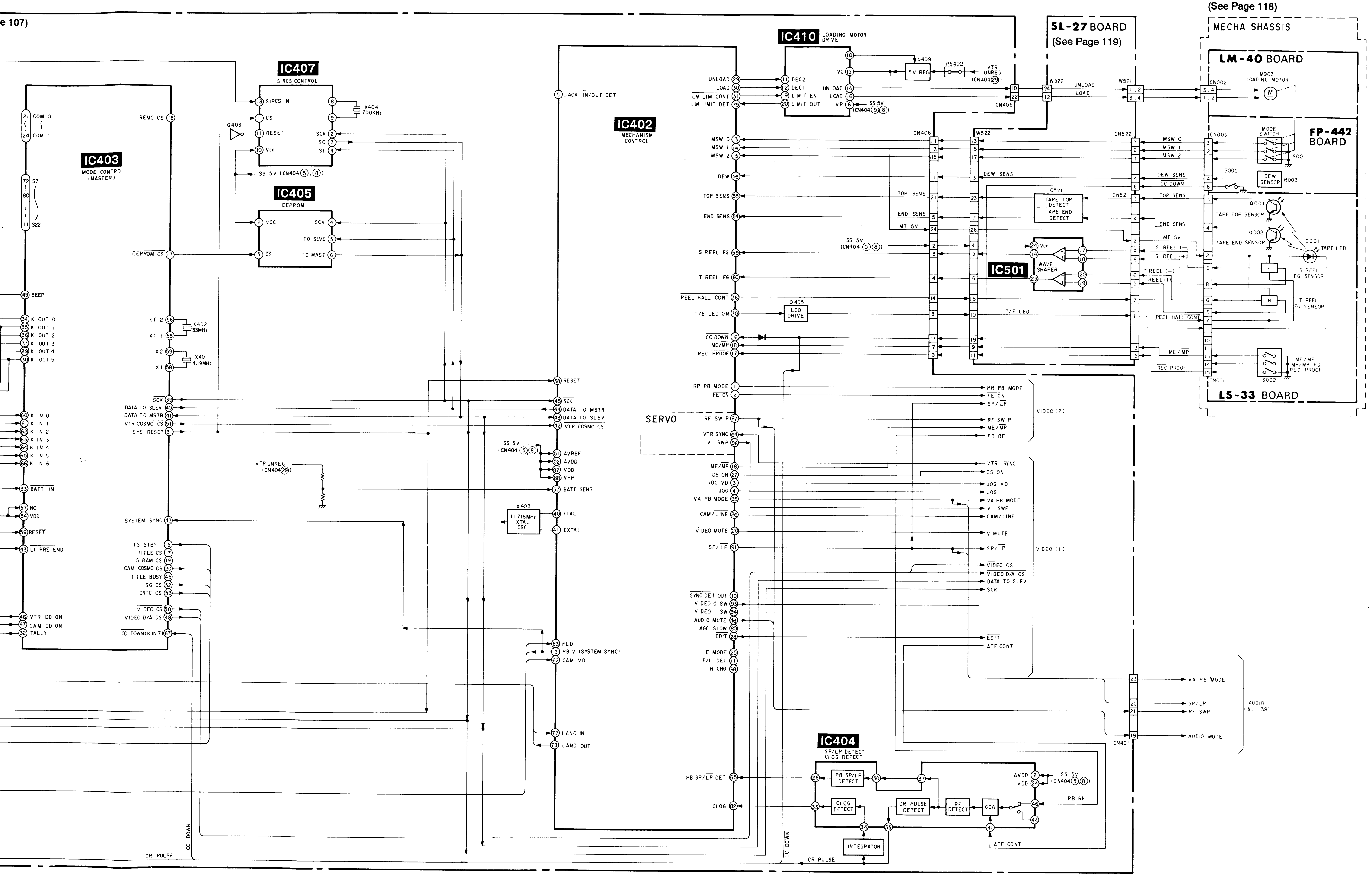
## 3-8. SERVO BLOCK DIAGRAM


MECHA CHASSIS
(See Page 118)
DRUM
FG
PG
CN005
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (-)
(See Page 119)
SL-27 BOARD
IC521
DRUM FG/ PG WAVE SHAPER
CN523
FG (+)
FG/PG COM
PG (+)
LPF
WAVE SHAPER
2V
W523
IC001 (1/2)
CAPSTAN FG WAVE SHAPER
Vcc (CN004 ③)
CN004 FG OUT
CN502
VS-95 BOARD
(See Page 107)
FOR CHECK
CN002
CN401
RF SWP
AUDIO (AU-138)
VIDEO (2)
VTR SYNC (IC151 ㉕)
VIDEO (1)
VI SWP
2.5Vp-p
H
IC402 (64) REC/PB
IC402
SERVO
DRUM SERVO
VTR SYNC
RF SWP
VI SWP
DRUM FG
DRUM PWM
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHANISM CONTROL
CFG HMS
DRUM ACC
SS 5V (CN404 ⑤⑧)
A VREF
A VDD
VDD
VPP
DRUM BRK
DRUM ON
DRUM REV
CAP ON
CAP FWD/ RVS
RP PB MODE
ATT
5Vp-p
2V
IC402 (97) REC/PB
22μsec
IC402 (74) REC/PB
IC408 (1/2)
LPF
PROTECT
0.16V
IC402 (73) REC/PB
CN404
DRUM ERR
CAP ON
CAP ERR
CN901
Q901
BUFFER
DD-48 BOARD
(See Page 137)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
UNREG (F901)
TRIANGLE OSC
Q905 SWITCHING
Q906 SWITCHING
L912
L913
CN901
CN404
DRUM VS
CAP VS
MOTOR UNREG (CN404 ㉗㉚)
SS 5V (CN404 ⑤⑧)
VTR UNREG (W201 ㉞)
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
CAP ON
D402
STBY
DRUM REV
REF
DIR
BRA
3.3msec.
IC402 (67) REC/PB
IC402 (66) REC/PB
0.72msec(SP)
1.4msec(LP)
IC402 (68) REC/PB
8mVp-p
6μsec
IC404 (48) PB
1Vp-p
IC404 (9) REC/PB
IC404 (6) (7) PB
5.4Vp-p
11.718MHz IC404 (23) REC/PB
IC404
ATF SERVO
R/P PB
REF PILOT
SCF CLOCK
REC ATF
VIDEO (2)
PB RF
LPF
BUFFER
LPF 2 (SCF)
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
FH DET
V REF
SCF CLOCK GENERATOR
11.718MHz X403
A Vdd
Vdd
0.76Vp-p
IC404 (18) REC
2Vp-p
IC404 (15) PB
CN004
CN406
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
STBY
CAP FWD/

R CHECK
RF SWP
AUDIO (AU-138)
CN401
RF SWP
VIDEO (2)
VTR SYNC (IC151 ㉕)
VIDEO (1)
V1 SWP
5Vp-p
2V
IC402 (97) REC/PB
IC408 (1/2)
LPF
LPF
PROTECT
0.16V
5Vp-p
22μsec
IC402 ㊹ REC/PB
LPF
CN404
DRUM ERR
CAP ERR
ATT
5Vp-p
22μsec
IC402 ㊸ REC/PB
8mVp-p
6μsec
IC404 (48) PB
1Vp-p
6μsec
IC404 ⑨ REC/PB
1Vp-p
2V
IC404 ⑥ ⑦ PB
5.4Vp-p
11.718MHz IC404 ㉓ REC/PB
R/P PB
SCF CLOCK
BUFFER
LPF 2 (SCF)
SCF CLOCK
LPF 1 (SCF)
PRE AMP
REF PILOT
BALANCED MODULATOR
SCF CLOCK
16KHz BPF (SCF)
46KHz BPF (SCF)
SCF CLOCK
LPF
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.718MHz X403
2Vp-p
2V
IC404 ⑮ PB
DD-48 BOARD
(See Page 137)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
UNREG (F901)
UNREG (F901)
L912
Q905 SWITCHING
CAP ON
Q901
BUFFER
CN901
TRIANGLE OSC
PWM MOD
SHORT CIRCUIT PROTECT
UNREG (F901)
UNREG (F901)
L913
Q906 SWITCHING
CN901
CN404
DRUM VS
CAP VS
MOTOR UNREG (CN404㉗,㉚)
SS 5V (CN404⑤,⑧)
VTR UNREG (W201㉞)
IC408 (1/2)
DRUM MOTOR DRIVE
DRUM ON
CAP ON
D402
DRUM REV
Vcc 2
Vcc 1
REF
OVER-HEAT PROTECT
ROTER POSITION DETECT
COM
VS
U IN
V IN
W IN
STBY
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U
V
W
DIR
BRAKE
I COM
R549-552
DRUM DRIVE CURRENT SENS
1.4Vp-p
10msec
IC408 ⑭,⑯,⑱ REC/PB
LPF
LPF
LPF
CN406
W522
(See Page 119)
SL-27 BOARD (1/2)
CN523
MECHA CHASSIS
(See Page 118)
CN005
M901 DRUM MOTOR
CN004
CN406
MOTOR UNREG (CN404㉗,㉚)
SS 5V (CN404⑤,⑧)
IC001 (1/2)
CAPSTAN MOTOR DRIVE
VS
Vcc
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
STBY
POWER OFF
HE POWER
VH+
VH-
CAP FWD/ RVS
FRC
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
C HALL Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
C HALL GND

## 3-9. SYSTEM CONTROL BLOCK DIAGRAM


(See Page 115)
VK-27 BOARD (See Page 117)
ED-35 BOARD (See Page 116)
CF-32 BOARD
VS-95 BOARD (See Page 107)
CN-65 BOARD (See Page 115)
S976 STOP
S981 EDIT SEARCH (+)
S979 REW
S978 EDIT SEARCH (-)
S984 PAUSE
S980 PLAY
S978 EDIT SEARCH (REV)
S981 EDIT SEARCH (CUE)
S983 FF
S977
POWER
CAMERA
OFF
PLAYER
S990 EDIT
S998 REMOTE COMMANDER ON/OFF
S987 SUMMER TIME
S989 AREA
S986 BEEP
S995 COUNTER RESET
S993 DATE
S991 FADER
S996 TIME
S994 TAPE RETURN
S992 PROGRAM AE
OFF
PORTRAIT
SPORTS
HIGH SPEED
NIGHT
SP991 BEEP
BEEP ON
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
D 5V
FOCUS 1
FOCUS 2
W987
W986
W991
CN518
CN403
(See Page 116)
MF-191 BOARD
S971 FOCUS
S973 LENS COVER
S972 FOCUS RING
W971
CN993
D 5V (CN404 ⑤,⑧)
IC403
MODE CONTROL (MASTER)
COM 0
COM 1
S3
S22
REMO CS
EEPROM CS
BEEP
XT 2
XT 1
X 2
X 1
SCK
DATA TO SLEV
DATA TO MSTR
VTR COSMO CS
SYS RESET
BATT IN
NC
VDD
RESET
LI PRE END
SYSTEM SYNC
VTR DD ON
CAM DD ON
TALLY
TG STBY 1
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN(K IN 7)
S519
LOCK
STANDBY
W519
S520 START/STOP
(See Page 137)
SW-205 BOARD
S901 EJECT
CN902
CAM POWER COM
LANC DC
LANC SIG
CN901
J902 REMOTE
(See Page 137)
DD-48 BOARD
IC409
LANC I/O
WAKE UP
DATA OUT
DATA IN
LANC IN
LANC OUT
CURRENT LIMITER
5.6V REG
UNREG
POWER CONT
EVER 5V (IC401 ⑦)
VTR UNREG (CN404 ㉙)
PS401
5V REG
BATTERY IN DETECT
EVER 5V
LI 3V
LITHIUM BATTERY PRE END DETECT
INITIAL RESET
Q401
IC401
POWER (DD-48)
VTR DD ON
CAM DD ON
EVF (VF-42)
TALLY
CN404
CN102
(See Page 117)
LI-44 BOARD
LITHIUM BATTERY
LI 3V
CN516
CN407
IC406
CHARACTER GENERATOR
EVER 5V (IC401 ⑦)
FL401
OSC FILTER
VDD
OSC 0
OSC 1
SCK
STB
DATA
PCL
H
V
DDS VOB
DDS VOW
DS VOB
DS VOW
CRTC CS
ZOOM SW
BACK UP VDD
CG H
CR PULSE
DDS VOB
DDS VOW
SYSTEM RESET
VTR SCK
DATA TO SLV
DATA TO MSTR
CAM COSMO CS
CAMERA(1)
SG CS
TG STBY 1
FLD
PB V
CAM VD
FOCUS 1
FOCUS 2
W405
CR PULSE
W
T
ZOOM FT
ZOOM T
ZOOM FW
ZOOM F
CN603
(See Page 126)
ZOOM SWITCH UNIT
IC602
REMOTE CONTROL RECIEVER
Vcc
R OUT
SIRCS SIG
ZOOM SW
SS 5V
CN602
SS 5V (CN404 ⑤,⑧)
AU-138 BOARD
(See Page 125)


e 107)
(See Page 118)
SL-27 BOARD
(See Page 119)
MECHA SHASSIS
LM-40 BOARD
M903
LOADING MOTOR
FP-442 BOARD
LS-33 BOARD
MODE SWITCH
S001
S005
DEW SENSOR
R009
TAPE TOP SENSOR
Q001
TAPE END SENSOR
Q002
D001
TAPE LED
S REEL FG SENSOR
T REEL FG SENSOR
S002
ME/MP
MP/MP-HG
REC PROOF
IC403
MODE CONTROL (MASTER)
IC407
SIRCS CONTROL
X404 700KHz
IC405
EEPROM
IC402
MECHANISM CONTROL
IC410
LOADING MOTOR DRIVE
Q409
5V REG
PS402
VTR UNREG (CN404 ㉙)
IC501
WAVE SHAPER
Q521
TAPE TOP DETECT
TAPE END DETECT
Q405
LED DRIVE
Q403
X402 33MHz
X401 4.19MHz
X403 11.718MHz XTAL OSC
SERVO
IC404
SP/LP DETECT
CLOG DETECT
PB SP/LP DETECT
CLOG DETECT
CR PULSE DETECT
RF DETECT
GCA
INTEGRATOR
VIDEO (2)
VIDEO (1)
AUDIO (AU-138)
CN401
CN406
CN522
CN521
W522
W521
CN002
CN003
CN001
UNLOAD
LOAD
MSW 0
MSW 1
MSW 2
DEW SENS
CC DOWN
TOP SENS
END SENS
MT 5V
S REEL (−)
S REEL (+)
T REEL (−)
T REEL (+)
REEL HALL CONT
T/E LED
ME/MP
REC PROOF
SS 5V (CN404 ⑤⑧)
COM 0
COM 1
S3
S22
REMO CS
EEPROM CS
BEEP
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
BATT IN
NC
VDD
RESET
LI PRE END
VTR DD ON
CAM DD ON
TALLY
SCK
DATA TO SLEV
DATA TO MSTR
VTR COSMO CS
SYS RESET
SYSTEM SYNC
TG STBY I
TITLE CS
S RAM CS
CAM COSMO CS
TITLE BUSY
SG CS
CRTC CS
VIDEO CS
VIDEO D/A CS
CC DOWN (KIN 7)
JACK IN/OUT DET
AVREF
AVDD
VDD
VPP
BATT SENS
XTAL
EXTAL
FLD
PB V (SYSTEM SYNC)
CAM VD
LANC IN
LANC OUT
RP PB MODE
FE ON
RF SW P
VTR SYNC
VI SWP
DS ON
JOG VD
JOG
VA PB MODE
CAM/LINE
VIDEO MUTE
SP/LP
SYNC DET OUT
VIDEO 0 SW
VIDEO 1 SW
AUDIO MUTE
AGC SLOW
EDIT
E MODE
E/L DET
H CHG
PB SP/LP DET
CLOG
PR PB MODE
PB RF
V MUTE
VIDEO D/A CS
DATA TO SLEV
ATF CONT
RF SWP
AUDIO MUTE
CR PULSE
CC DOWN
NAMO 32
AVDD
VDD

## 3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC402 ON VS-95 BOARD: CXP80624)

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 1 | PB3/PP011 | RP PB MODE | O | VS | REC/PB select signal of REC/PB amplifier (IC001 on VS-95 board) and ATF servo IC (IC404 on VS-95 board). "H": PB. |
| 2 | PB2/PP010 | FE ON | O | VS | Flying erase oscillation ON/OFF control signal. "L": oscillation. |
| 3 | PB1/PP09 | JOG VD | O | VS | False VD signal to be inserted into playback video signal during variable speed playback. |
| 4 | PB0/PP08 | JOG | O | VS | Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback. |
| 5 | PC7/RT07 | JACK IN/OUT | I | VS | Not used. Connected to +5V. |
| 6 | PC6/RT06 | 1.7M DET | I | VS | Not used. |
| 7 | PC5/RT05 | JACK MONO/STE DET | I | VS | |
| 8 | PC4/RT04 | INT VD | I | | |
| 9 | PC3/RT03 | PB V (SYSTEM SYNC) | O | MODE CON | V sync for mode controller. |
| 10 | PC2/RT018 | SYNC DET OUT | O | VS | Sync detect output. "L" when Sync is detected. |
| 11 | PC1/RT017 | E/L DET | I | VS | Not used. |
| 12 | PC0/RT016 | MIC MONO/ST DET | I | AU | |
| 13 | PJ7 | M SW 0 | I | MD | Mode switch input.<br>BL / END / EJECT / USE / LOAD / READY / TURN / REC/PB / FF<br>M SW 0: L / L / L / H / L / H / H / L / L<br>M SW 1: L / H / L / L / L / L / H / H / L<br>M SW 2: L / H / H / H / H / L / L / L / L |
| 14 | PJ6 | M SW 1 | I | MD | |
| 15 | PJ5 | M SW 2 | I | MD | |
| 16 | PJ4 | CC DOWN | I | MD | Cassette compartment down switch input. "L": down. |
| 17 | PJ3 | REC PROOF | I | MD | Erasure protection switch input. "L" when REC prohibit. |
| 18 | PJ2 | ME/MP | I | MD | ME/MP switch input. "L": MP, "H": ME. |
| 19 | PJ1 | HG/NOR | I | MD | Connected to GND. |
| 20 | PJ0 | VIDEO MUTE | O | VS | Video output mute signal. "H": mute. |
| 21 | PD7 | LINE MIX | I | VS | Not used. |
| 22 | PD6 | MAT SEL 1 | I | VS | |
| 23 | PD5 | MAT SEL 2 | I | VS | |
| 24 | PD4 | MAT ON/OFF | O | VS | |
| 25 | PD3 | E MODE | O | VS | |
| 26 | PD2 | CAM/LINE | O | VS | Camera input/line input select signal. "H" when camera input. |
| 27 | PD1 | DS ON | O | VS | Data screen ON/OFF signal. "H": ON. |
| 28 | PD0 | EDIT | O | VS | Video circuit EDIT/NORMAL switch signal. "L": EDIT. |
| 29 | PH7 | UNLOAD | O | VS | Loading motor control signal. "H" or "H" pulse when unloading. |
| 30 | PH6 | LOAD | O | VS | Loading motor control signal. "H" or "H" pulse when loading. |
| 31 | PH5 | LM LIM COM | O | VS | Loading motor limiter control signal. Temporary "H" when loading. |
| 32 | PH4 | COMP REC | O | VS | Not used. |
| 33 | PH3 | DRUM REV | O | VS | Drum rotating control signal . Normally "L". |
| 34 | PH2 | | O | | N.C. |
| 35 | PH1 | | O | | |
| 36 | PH0 | REEL HALL CONT | O | VS | Reel FG sensor (HALL element) power supply control signal. |
| 37 | MP | MP | | | Connected to GND. |
| 38 | RST | RESET | I | MODE CON | Reset signal from mode control microprocessor. "L" when reset. |
| 39 | VSS | VSS | | | GND |
| 40 | XTAL | XTAL | I | VS | 11.89 MHz clock oscillation circuit. |
| 41 | EXTAL | EXTAL | O | VS | |
| 42 | CSO | VTR COSMO CS | I | MODE CON | Chip select signal from mode control microprocessor (VS-95 board IC403) |
| 43 | S10 | DATA TO SLVE | I | MODE CON | Serial data input from mode control microprocessor. |
| 44 | S00 | DATA TO MSTR | O | MODE CON | Serial data output to mode control microprocessor. |
| 45 | SCKO | SCK | I | MODE CON | Serial clock input from mode control microprocessor. |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 46 | PF7/AN11 | AUDIO MUTE | O | VS | Audio output mute signal. "H": mute. |
| 47 | PF6/AN10 | 1.7M OFF | O | VS | Not used. |
| 48 | PF5/AN9 | GND | I | | GND |
| 49 | PF4/AN8 | GND | I | | |
| 50 | AVSS | AVSS | | | Analog port GND. |
| 51 | AVREF | AVREF | | | Analog port reference voltage. Connected to +5V. |
| 52 | AVDD | VDD | | | Analog port power supply (5V). |
| 53 | PF3/AN7 | N.C. | | | Connected to GND. |
| 54 | PF2/AN6 | END SENS | I | VS | Tape end detection signal. Normally "L", "H" pulse: tape end. |
| 55 | PF1/AN5 | TOP SENS | I | VS | Tape top detection signal. Normally "L", "H" pulse: tape top. |
| 56 | PF0/AN4 | DEW | I | VS | Dew condensation detection signal. "L" when dew condensation. |
| 57 | AN3 | BATT SENSE | I | VS | Battery voltage input for battery end detection. 1/2 divided by RB401. |
| 58 | AN2 | ATF ERROR | I | VS | ATF error, ATF lock error input. |
| 59 | AN1 | S REEL FG | I | VS | S reel FG signal input. |
| 60 | AN0 | T REEL FG | I | VS | T reel FG signal input. |
| 61 | PG7/EXI1 | PG7 (N.C.) | | | Connected to GND. |
| 62 | PG6/EXI0 | CAM VD | I | CAM SG | VD signal from camera circuit sync generator. V period pulse. |
| 63 | PG5/SYNC1 | FLD | I | CAM SG | FIELD signal from camera circuit sync generator. 2V period pulse. |
| 64 | PG4/SYNC0 | VTR SYNC | I | VS | Composite sync signal separated from REC/PB Y signal. |
| 65 | PG3/PBCTL | PB SP/LP DET | I | VS | Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP. |
| 66 | PG2/DPG | DRUM PG | I | VS | Drum PG signal input. For drum phase servo 40 msec period "H" pulse. |
| 67 | PG1/DFG | DRUM FG | I | VS | Drum FG signal input. For drum speed servo 3.3 msec period pulse. |
| 68 | PG0/CFG | CAP FG | I | MD | Capstan FG signal input. For capstan speed servo. Approx. 1388 Hz when REC/PB (SP). |
| 69 | PE7/DAB0 | N.C. | O | | N.C. |
| 70 | PE6/DAB0 | T/E LED ON | O | VS | Tape LED ON/OFF signal. 100 msec period "H" pulse when REC/PB. |
| 71 | PE5/DAA1 | N.C. | O | | N.C. |
| 72 | PE4/DAA0 | N.C. | O | | |
| 73 | PE3/PWM1 | CAP PWM | O | VS | Capstan error signal output 20.15 µsec PWM signal. |
| 74 | PE2/PWM0 | DRUM PWM | O | VS | Drum error signal output 20.15 µsec PWM signal. |
| 75 | PE1/EC/INT2 | C FG | I | MD | Capstan FG signal input. For tape counter. |
| 76 | PE0/INT0 | S JACK IN | | | Not used, connected to +5V. |
| 77 | P17/ST1 | LANC IN | I | VS | Control L serial data input. |
| 78 | P16/SO1 | LANC OUT | O | VS | Control L serial data output. |
| 79 | P15/SCK1 | LM LIMIT DET | I | VS | Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON. |
| 80 | P14/INT1 | AGC SLOW | | | Not used. |
| 81 | P13/TO | DRUM ON | O | VS | Drum driver ON/OFF control signal. "H" when drum ON. |
| 82 | P12/PWM | CLOG | O | VS | Head clog detection signal. "L" when no trouble. |
| 83 | P11/PO | REF PILOT | O | VS | ATF servo reference pilot signal. Synchronized when drum rotation to output by selecting four frequencies. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz. |
| 84 | P10/PCK | | | | Connected to +5V. |
| 85 | PKO | 13/10 SW | I | MD | Not used. |
| 86 | VSS | VSS | | | GND |
| 87 | VDD | VDD | | | VDD |
| 88 | N.C. | (VPP) | | | Connected to +5V. |
| 89 | PA7/PP07 | DRUM ACC | O | VS | Drum motor acceleration signal. Not used. |

| Pin No. | Po |
|---|---|
| 90 | PA6 |
| 91 | PA5 |
| 92 | PA4 |
| 93 | PA3 |
| 94 | PA2 |
| 95 | PA1 |
| 96 | PA0 |
| 97 | PB7 |
| 98 | 0 |
| 99 | 11 |
| 100 | PB4 |

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'H" pulse.

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| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 90 | PA6/PP06 | DRUM BRK | O | VS | Drum motor brake signal. Normally "L". |
| 91 | PA5/PP05 | SP/$\overline{\text{LP}}$ | O | VS | SP/LP select signal. "L": LP. |
| 92 | PA4/PP04 | AU IN/OUT | O |  | Not used. |
| 93 | PA3/PP03 | VIDEO O SW | O | VS | VIDEO OUT inhibit signal. "H": inhibit. |
| 94 | PA2/PP02 | VIDEO I SW | O | VS | VIDEO IN/OUT select signal. Not used. |
| 95 | PA1/PP01 | VA PB MODE | O | ALL | Video/audio circuit REC/PB select signal. "H": PB. |
| 96 | PA0/PP00 | VI SWP | O | VS | RF switching pulse signal for video circuit. 25 Hz, 50% duty pulse. |
| 97 | PB7/PP015 | RF SWP | O | ALL | RF switching pulse signal for REC/PB amp and Audio circuit. 25 Hz, 50% duty pulse. |
| 98 | 0 | H CHG | O | VS | Not used. |
| 99 | 11 | CAP ON | O | MD | Capstan driver ON/OFF control signal. "H" when capstan ON. |
| 100 | PB4/PP012 | CAP FWD/$\overline{\text{RVS}}$ | O | MD | Capstan rotating direction control signal. "H": FWD, "L": RVS. |

## 3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC403 ON VS-95 BOARD: μPD75316)

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 1 | S12 | S12 | O |  | Segment terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 2 | S13 | S13 | O |  |  |
| 3 | S14 | S14 | O |  |  |
| 4 | S15 | S15 | O |  |  |
| 5 | S16 | S16 | O |  |  |
| 6 | S17 | S17 | O |  |  |
| 7 | S18 | S18 | O |  |  |
| 8 | S19 | S19 | O |  |  |
| 9 | S20 | S20 | O |  |  |
| 10 | S21 | S21 | O |  |  |
| 11 | S22 | S22 | O |  |  |
| 12 | S23 | S23 | O |  |  |
| 13 | S24/BP0 | $\overline{\text{EEPROM CS}}$ | O |  | Chip select signal to EEPROM (IC406 on VS-95 board). 1/2V period "L" pulse. |
| 14 | S25/BP1 | N.C | O |  | Not used. |
| 15 | S26/BP2 | TG STBY 1 | O | CAM | Power save control signal to timing generator (IC801 on VC-122 board). Normally "L". |
| 16 | S27/BP3 |  | O |  | N.C. |
| 17 | S28/BP4 | $\overline{\text{CS TITLE}}$ | O | CAM | Not used. |
| 18 | S29/BP5 | REMO CS | O |  | Chip select signal to sircs remote controller (IC907 on VS-95 board). 1V period "L" pulse. |
| 19 | S30/BP6 | S RAM CS | O |  | Not used. |
| 20 | S31/BP7 | $\overline{\text{CAM COSM CS}}$ | O | CAM | Chip select signal to camera controller (IC709 on VC-122 board). 1V period "L" pulse. |
| 21 | COM0 | COM 0 | O |  | Common terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 22 | COM1 | COM 1 | O |  |  |
| 23 | COM2 | COM 2 | O |  |  |
| 24 | COM3 | COM 3 | O |  |  |
| 25 | BIAS | BIAS | O |  | Bias voltage output for voltage deviding resistor. Not used. |
| 26 | VLC0 | VCC 0 | I |  | Power source 0 input — Power source for LCD dirve. Not used. |
| 27 | VLC1 | VCC 1 | I |  | Power source 1 input |
| 28 | VLC2 | VCC 2 | I |  | Power source 2 input |
| 29 | P40 | K OUT 4 | O | all | KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases. |
| 30 | P41 | K OUT 5 | O | all |  |
| 31 | P42 | $\overline{\text{SYS RESET}}$ | O | all | Output signal to reset each IC when power is turned on. Normally "H". |
| 32 | P43 | $\overline{\text{TALLY}}$ | O | EVF | Tally LED ON/OFF signal. "L": ON. |
| 33 | VSS | VSS |  |  | GND |
| 34 | P50 | K OUT 0 | O | all | KEY matrix output.<br>1V period "L" pulse output when corresponding key is pressed. "L" when other cases. |
| 35 | P51 | K OUT 1 | O | all |  |
| 36 | P52 | K OUT 2 | O | all |  |
| 37 | P53 | K OUT 3 | O | all |  |
| 38 | P00/INT4 | $\overline{\text{BATT IN}}$ | I |  | Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select. |
| 39 | P01/$\overline{\text{SCK}}$ | $\overline{\text{SCK}}$ | O | all | Serial clock output terminal, Serial clock (2 μS) communication. |
| 40 | P02/SO/SB0 | DATA TO SLVE | O | all | Serial bus output terminal, Serial clock (2 μS) communication. |
| 41 | P03/SI/SB1 | DATA TO MSTR | I | all | Serial bus input terminal, Serial clock (2 μS) communication. |
| 42 | P10/INT0 | SYSTEM SYNC | I | all | (Edge detection vector interruption), System synchronization input port from CXP80624 (IC402 on VS-95 board). |

| Pin No. | Port Name | Signal | I/O | Connection | Function |
|---|---|---|---|---|---|
| 43 | P11/INT1 | $\overline{\text{LI PRE END}}$ | I | | (Edge detection vector interruption), Lithium PRE END is selected with "L". |
| 44 | P12/INT2 | $\overline{\text{LANC PWR ON}}$ | I | | Power on signal input from wired remote control. "L" when power switch pressed. |
| 45 | P13/TIO | TITLE BUSY | I | CAM | Not used. |
| 46 | P20/PT00 | VTR DD ON | O | PS | VTR power source (VIDEO 5V, RP 5V, AUDIO 5V, EVF 5V, D5V, (SS5V), D4V, CORE 4V) control signal. "H" when power switch is in "PLAYER" or "CAMERA" position. |
| 47 | P21 | CAM DD ON | O | PS | CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position. |
| 48 | P22/PCL | $\overline{\text{VIDEO D/A CS}}$ | O | VA | Serial data load signal to video circuit EVR (IC156, 158 on VS-95 board). 1V period "H" pulse. |
| 49 | P23/BUZ | BEEP | O | | Buzzer output. Normally "L". 2 kHz pulse: alarm. |
| 50 | P30/LCDCL | $\overline{\text{VIDEO CS}}$ | O | VA | Chip select signal to Y process IC (IC151 on VS-95 board). 1V period "L" pulse. |
| 51 | P31/SYNC | $\overline{\text{VTR COSM CS}}$ | O | | Chip select signal to mechanism controller (IC402 on VS-95 board). 1V period "L" pulse. |
| 52 | P32 | $\overline{\text{SG CS}}$ | O | CAM | Chip select signal to sync generator (IC704 on VC-122 board). 1V period "L" pulse. |
| 53 | P33 | $\overline{\text{CRTC CS}}$ | O | CAM | Strobe signal for character generator (IC406 on VS-95 board). 1V period "H" pulse. |
| 54 | VDD | VDD | | | VDD |
| 55 | XT1 | XT1 | I | | SUB system clock.<br>32 kHz oscillation terminal. |
| 56 | XT2 | XT2 | | | |
| 57 | N.C. | N.C. | | | N.C. |
| 58 | X1 | X1 | I | | Main system clock.<br>4.19 MHz oscillation terminal. |
| 59 | X2 | X2 | I | | |
| 60 | P60/KK0 | K IN 0 | I | all | KEY matrix input.<br>1V period "L" pulse input when corresponding key is pressed. "H" when other case. |
| 61 | P61/KR1 | K IN 1 | I | all | |
| 62 | P62/KR2 | K IN 2 | I | all | |
| 63 | P63/KR3 | K IN 3 | I | all | |
| 64 | P70/KR4 | K IN 4 | I | all | |
| 65 | P71/KP5 | K IN 5 | I | all | |
| 66 | P72/KP6 | K IN 6 | I | all | |
| 67 | P73/KP7 | $\overline{\text{CC DOWN}}$ | I | MD | Cassette compartment lock switch input. "L": Lock. |
| 68 | $\overline{\text{RESET}}$ | $\overline{\text{RESET}}$ | I | | System reset input. "L": Reset, Normally: "H". |
| 69 | S0 | CLK CHK | O | | N.C. |
| 70 | S1 | S1 | O | | Segment terminal drive signal to LCD.<br>(Four value output of 0, 1.7, 3.3, 5V)<br>Not used. |
| 71 | S2 | S2 | O | | |
| 72 | S3 | S3 | O | | |
| 73 | S4 | S4 | O | | |
| 74 | S5 | S5 | O | | |
| 75 | S6 | S6 | O | | |
| 76 | S7 | S7 | O | | |
| 77 | S8 | S8 | O | | |
| 78 | S9 | S9 | O | | |
| 79 | S10 | S10 | O | | |
| 80 | S11 | S11 | O | | |

## 3-12. INTERFACE

### 3-12-1. System Control – Video/Audio Block Interface (VS-95 BOARD)

| NAME | I/O | No. | VTR MODE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STOP | FF | REW | FR SEARCH | | PB | PICTURE SEARCH | | PB· PAUSE | FRAME | SLOW |
| | | | | | | CUE | REVIEW | | CUE | REVIEW | | | |
| SP/$\overline{\text{LP}}$ | O | IC402 (91) | *1 | H | H | *2 | *2 | *2 | *2 | *2 | *1 | *1 | *1 |
| VA PB MODE | O | IC402 (95) | L | L | L | H | H | H | H | H | H | H | H |
| AUDIO MUTE *13 | O | IC402 ㊻ | L | L | L | H | H | L | H | H | H | H | H |
| VIDEO MUTE | O | IC402 ⑳ | *14 | *14 | *14 | *15 | *15 | *15 | *15 | *15 | *15 | *15 | *15 |
| CAM/$\overline{\text{LINE}}$ | O | IC402 ㉖ | L | L | L | L | L | L | L | L | L | L | L |
| JOG VD | O | IC402 ③ | L | L | L | *5 | *5 | L | *5 | *5 | *5 | *5 | *5 |
| RP PB MODE | O | IC402 ① | H | H | H | H | H | H | H | H | H | H | H |
| $\overline{\text{FE ON}}$ | O | IC402 ② | H | H | H | H | H | H | H | H | H | H | H |
| RF SWP | O | IC402 (97) | L | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 |
| JOG | O | IC402 ④ | L | L | L | H | H | L | H | H | H | H | H |
| $\overline{\text{VIDEO CS}}$ | O | IC403 ㊿ | V period "L | | | | | | | | | | |
| $\overline{\text{VIDEO D/A CS}}$ | O | IC403 ㊽ | V period 'H | | | | | | | | | | |
| DATA TO MSTR | I | IC403 ㊶ | V period "L | | | | | | | | | | |
| DATA TO SLVE | O | IC403 ㊵ | V period pu | | | | | | | | | | |
| $\overline{\text{SCK}}$ | I | IC403 ㊴ | V period "H | | | | | | | | | | |
| PB SP/$\overline{\text{LP}}$ DET | I | IC402 (65) | L | *10 | *10 | *10 | *10 | L | *10 | *10 | *10 | | |
| CLOG | I | IC402 (82) | H | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 |
| VTR SYNC | I | IC402 (64) | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 |

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)

*10. "H": SP recording
*11. "H": no recording
*12. Composite sync si
video signal. (pola
*13. "H" during camer
*14. "L" when external
*15. "H" when tape no

elected with

power

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VS-95

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d). 1V period

l). 1V period

d. "H" when

## 3-12. INTERFACE

### 3-12-1. System Control – Video/Audio Block Interface (VS-95 BOARD)

| NAME | I/O | No. | VTR MODE | | | | | | | | | | | | | | | | CAMERA MODE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STOP | FF | REW | FR SEARCH | | PB | PICTURE SEARCH | | PB· PAUSE | FRAME | SLOW | X2 | SHUTTLE EDIT *3 | | REC *4 | REC *4 PAUSE | STAND BY | REC | EDIT SEARCH | | REC REVIEW | |
| | | | | | | CUE | REVIEW | | CUE | REVIEW | | | | | FWD | REV | | | | | FWD | RVS | FWD | RVS |
| SP/$\overline{\text{LP}}$ | O | IC402 (91) | *1 | H | H | *2 | *2 | *2 | *2 | *2 | *1 | *1 | *1 | *1 | *2 | *2 | *6 | H/L | H/L | *6 | *2 | *2 | *2 | *2 |
| VA PB MODE | O | IC402 (95) | L | L | L | H | H | H | H | H | H | H | H | H | H | H | L | L | L | L | H | H | H | H |
| AUDIO MUTE *13 | O | IC402 ㊻ | L | L | L | H | H | L | H | H | H | H | H | L | H | H | L | L | L | L | H | H | H | H |
| VIDEO MUTE | O | IC402 ⑳ | *14 | *14 | *14 | *15 | *15 | *15 | *15 | *15 | *15 | *15 | *15 | *15 | *15 | *15 | *14 | *14 | L | L | *15 | *15 | *15 | *15 |
| CAM/$\overline{\text{LINE}}$ | O | IC402 ㉖ | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | H | H | L | L | L | L |
| JOG VD | O | IC402 ③ | L | L | L | *5 | *5 | L | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | L | L | L | L | *5 | *5 | *5 | *5 |
| RP PB MODE | O | IC402 ① | H | H | H | H | H | H | H | H | H | H | H | H | H | H | L | H | H | L | H | H | H | H |
| $\overline{\text{FE ON}}$ | O | IC402 ② | H | H | H | H | H | H | H | H | H | H | H | H | H | H | L | H | H | L | H | H | H | H |
| RF SWP | O | IC402 (97) | L | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 |
| JOG | O | IC402 ④ | L | L | L | H | H | L | H | H | H | H | H | H | H | H | L | L | L | L | H | H | H | H |
| $\overline{\text{VIDEO CS}}$ | O | IC403 ㊿ | V period "L" pulse | | | | | | | | | | | | | | | | | | | | | |
| $\overline{\text{VIDEO D/A CS}}$ | O | IC403 ㊽ | V period 'H" pulse | | | | | | | | | | | | | | | | | | | | | |
| DATA TO MSTR | I | IC403 ㊶ | V period "L" pulse | | | | | | | | | | | | | | | | | | | | | |
| DATA TO SLVE | O | IC403 ㊵ | V period pulse train | | | | | | | | | | | | | | | | | | | | | |
| $\overline{\text{SCK}}$ | I | IC403 ㊴ | V period "H" pulse | | | | | | | | | | | | | | | | | | | | | |
| PB SP/$\overline{\text{LP}}$ DET | I | IC402 (65) | L | *10 | *10 | *10 | *10 | L | *10 | *10 | *10 | | | *10 | L | *10 | H | H | H | H | L | *10 | L | *10 |
| CLOG | I | IC402 (82) | H | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | H | *11 | *11 | H | *11 | *11 | *11 | *11 |
| VTR SYNC | I | IC402 (64) | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 |

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*3. Edit search button pressed when playback pause mode.
*4. Mode for adjustment.
*5. False VD signal
*6. By REC MODE switch, "H": SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)
*13. "H" during camera mode load/unload.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.

### 3-12-2. System Control – Servo Block Interface

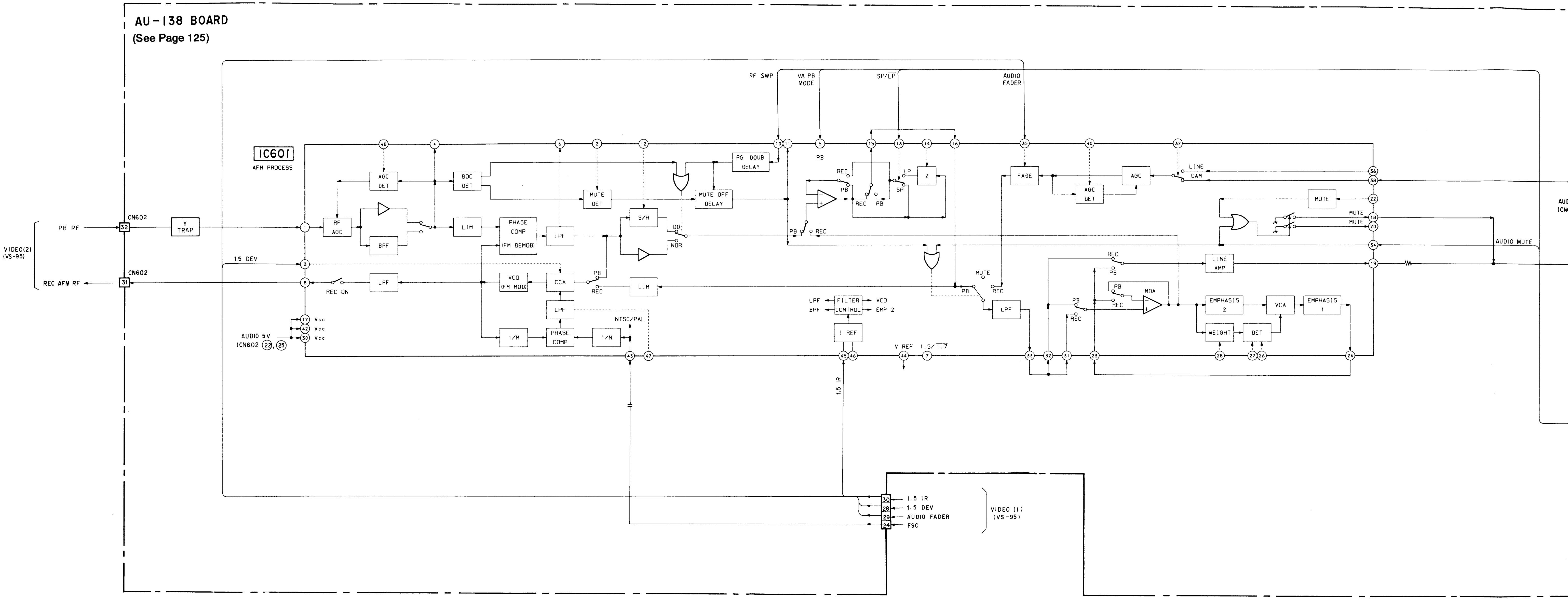
| NAME | I/O | No. | VTR MODE | | | | | | | | | | | | | | | | CAMERA MODE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STOP | FF | REW | FR SEARCH | | PB | PICTURE SEARCH | | PB·PAUSE | FRAME | SLOW | X2 | SHUTTLE EDIT *13 | | REC *14 | REC *14 PAUSE | STAND BY | REC | EDIT SEARCH | | REC REVIEW | |
| | | | | | | CUE | REVIEW | | CUE | REVIEW | | | | | FWD | REV | | | | | FWD | RVS | FWD | RVS |
| T.REEL FG | I | IC402 (60) | – | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | – | – | *1 | *1 | *1 | *1 | *1 |
| S.REEL FG | I | IC402 (59) | – | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | – | – | *1 | *1 | *1 | *1 | *1 |
| ATF ERROR | I | IC402 (58) | – | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 |
| DRUM PG | I | IC402 (66) | – | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 |
| DRUM FG | I | IC402 (67) | – | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 |
| CAP FG/ CFG HMS | I | IC402 (68), (75) | – | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 |
| CAP ON | O | IC402 (99) | L | H | H | H | H | H | H | H | L | *8 | *8 | H | H | H | H | L | L | H | H | H | H | H |
| REF PILOT | O | IC402 (83) | *7 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 |
| RP PB MODE | O | IC402 ① | H | H | H | H | H | H | H | H | H | H | H | H | H | H | L | H | H | L | H | H | H | H |
| DRUM REV *10 | O | IC402 ㉝ | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H |
| CAP FWD/ $\overline{\text{RVS}}$ | O | IC402 (100) | L | H | L | H | L | H | H | L | L | *8 | *8 | H | H | L | H | L | L | H | H | L | H | L |
| DRUM PWM | O | IC402 (74) | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 |
| CAP PWM | O | IC402 (73) | L | *9 | *9 | *9 | *9 | *9 | *9 | *9 | L | *9 | *9 | *9 | *9 | *9 | *9 | L | L | *9 | *9 | *9 | *9 | *9 |
| $\overline{\text{LM LIM CONT}}$ *11 | O | IC402 ㉛ | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L | L |
| DRUM ON *12 | O | IC402 (81) | L | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H |

*1. Inputting waveform which is similar to sine wave according to reel rotation.
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 25 Hz.
*4. 12 FG pulses input per one drum rotation, approx. 300 Hz.
*5. 520 FG pulses input per one capstan rotation. Approx. 1388 Hz when REC/PB (SP). 694 Hz when PB (LP).
*6. Four frequencies output synchronized with drum rotation. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search button pressed when playback pause mode.
*14. Mode for adjustment.

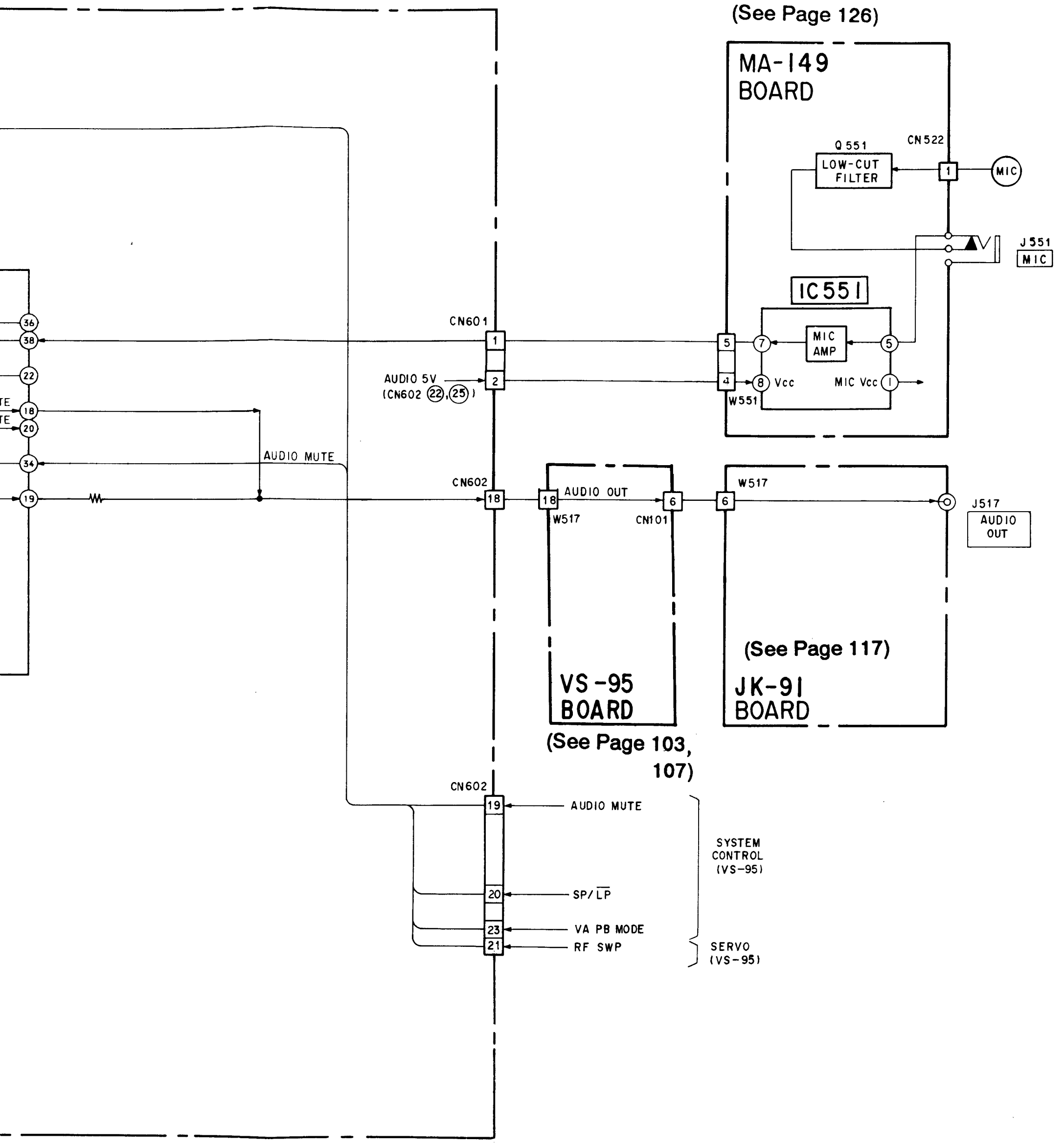
| TR MODE | | | | | | | | | CAMERA MODE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCH<br>IEW | PB-<br>PAUSE | FRAME | SLOW | X2 | SHUTTLE EDIT *13 | | REC *14 | REC *14<br>PAUSE | STAND<br>BY | REC | EDIT SEARCH | | REC REVIEW | |
| | | | | | FWD | REV | | | | | FWD | RVS | FWD | RVS |
| 1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | – | – | *1 | *1 | *1 | *1 | *1 |
| 1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | – | – | *1 | *1 | *1 | *1 | *1 |
| 2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 |
| 3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 |
| 4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 | *4 |
| 5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 |
| | L | *8 | *8 | H | H | H | H | L | L | H | H | H | H | H |
| | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 |
| | H | H | H | H | H | H | L | H | H | L | H | H | H | H |
| | H | H | H | H | H | H | H | H | H | H | H | H | H | H |
| | L | *8 | *8 | H | H | L | H | L | L | H | H | L | H | L |
| | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 |
| | L | *9 | *9 | *9 | *9 | *9 | *9 | L | L | *9 | *9 | *9 | *9 | *9 |
| | L | L | L | L | L | L | L | L | L | L | L | L | L | L |
| | H | H | H | H | H | H | H | H | H | H | H | H | H | H |

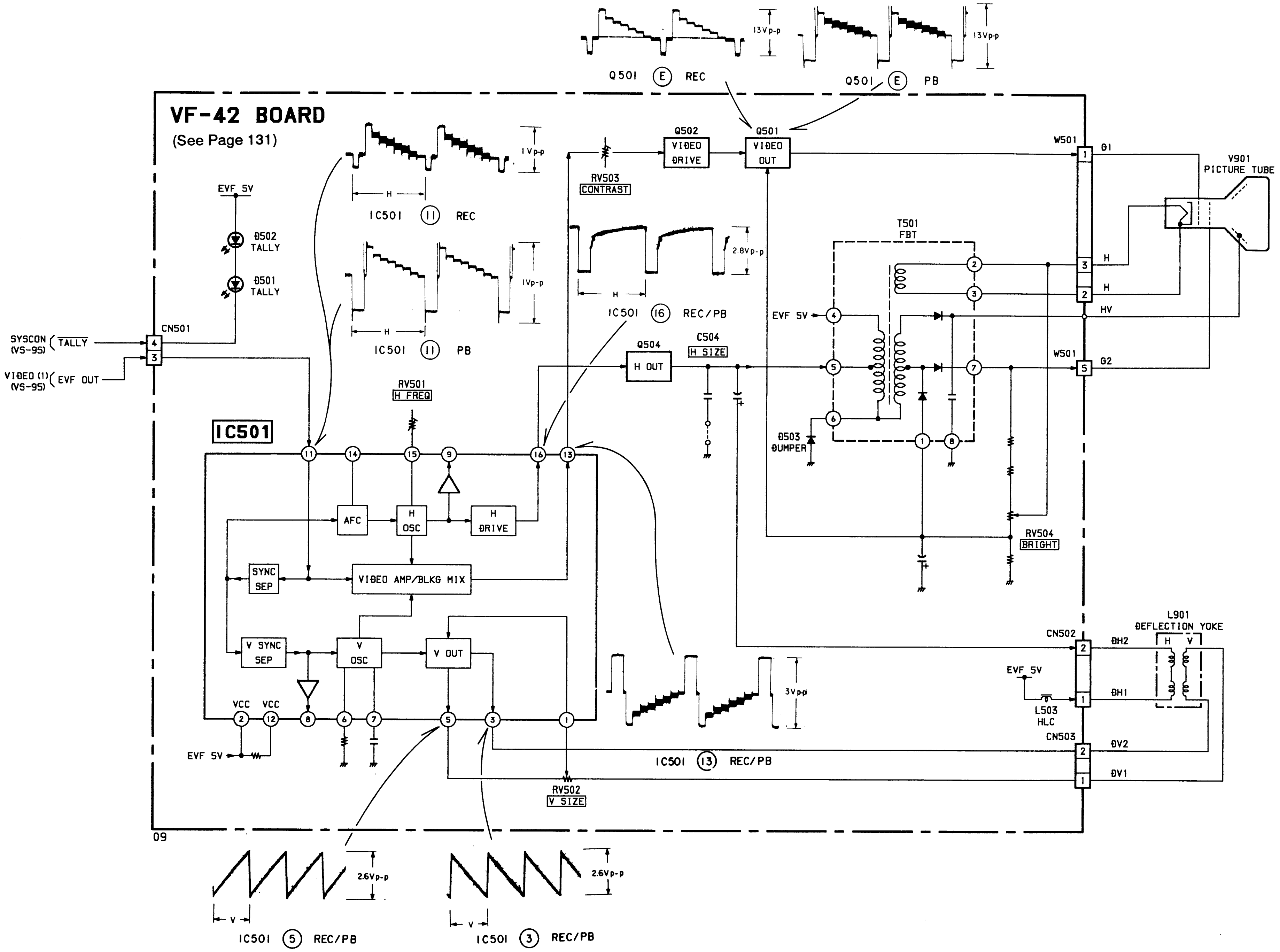
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search button pressed when playback pause mode.
*14. Mode for adjustment.

## 3-13. AUDIO BLOCK DIAGRAM

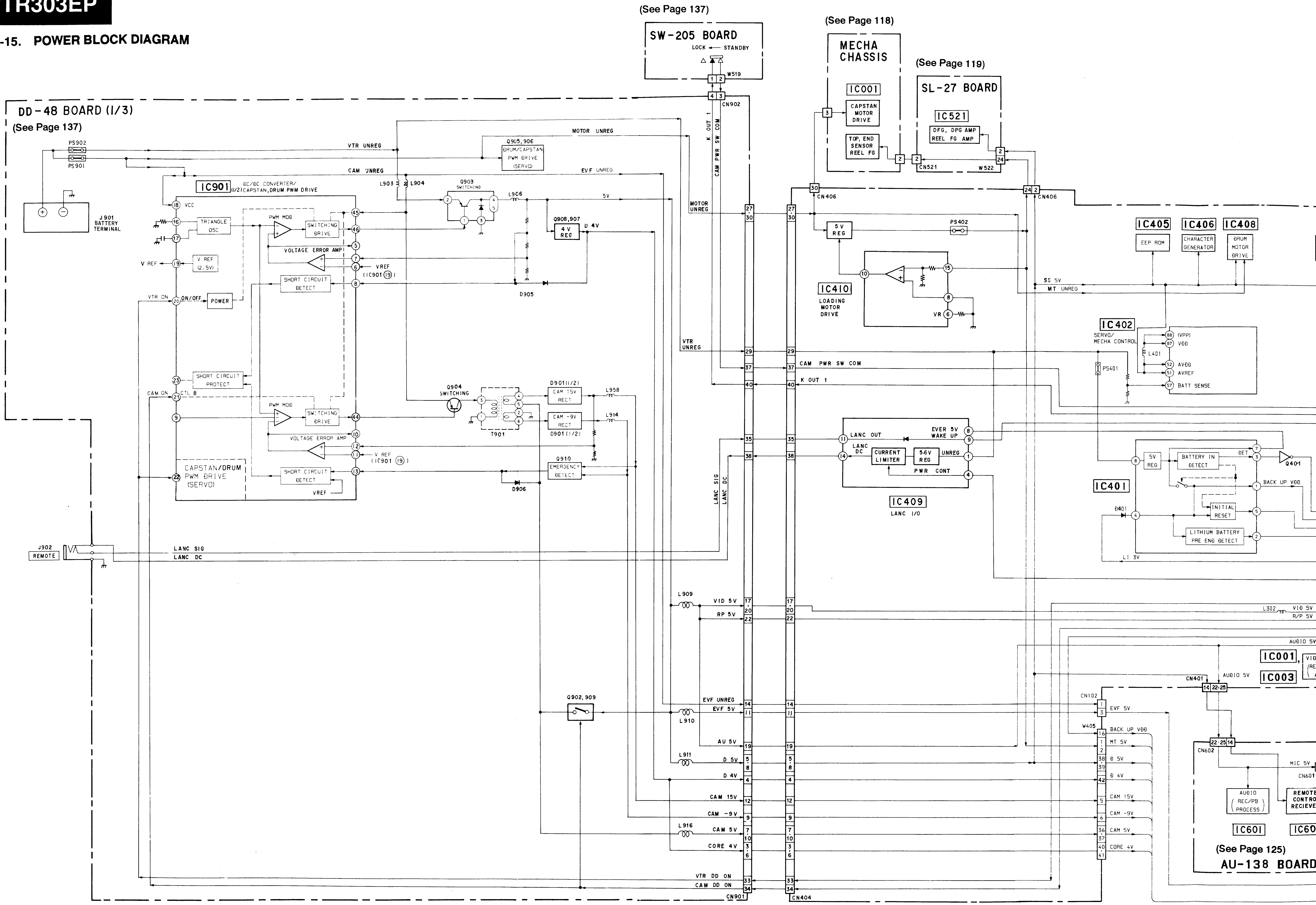

AU-138 BOARD
(See Page 125)
IC601
AFM PROCESS
VIDEO(2)
(VS-95)
PB RF
REC AFM RF
CN602
Y TRAP
1.5 DEV
RF AGC
AGC DET
BPF
DOC DET
LIM
PHASE COMP
(FM DEMOD)
LPF
MUTE DET
S/H
DO
NOR
PG DOUB DELAY
MUTE OFF DELAY
REC ON
VCO
(FM MOD)
CCA
PB
REC
1/M
PHASE COMP
1/N
NTSC/PAL
AUDIO 5V
(CN602 22, 25)
Vcc
RF SWP
VA PB MODE
SP/LP
AUDIO FADER
LP
SP
Z
FADE
AGC
LINE
CAM
MUTE
AUDIO MUTE
LINE AMP
MDA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
LPF
BPF
FILTER CONTROL
VCO
EMP 2
I REF
V REF
1.5/1.7
1.5 IR
1.5 DEV
AUDIO FADER
FSC
VIDEO (1)
(VS-95)
AUI
(CN

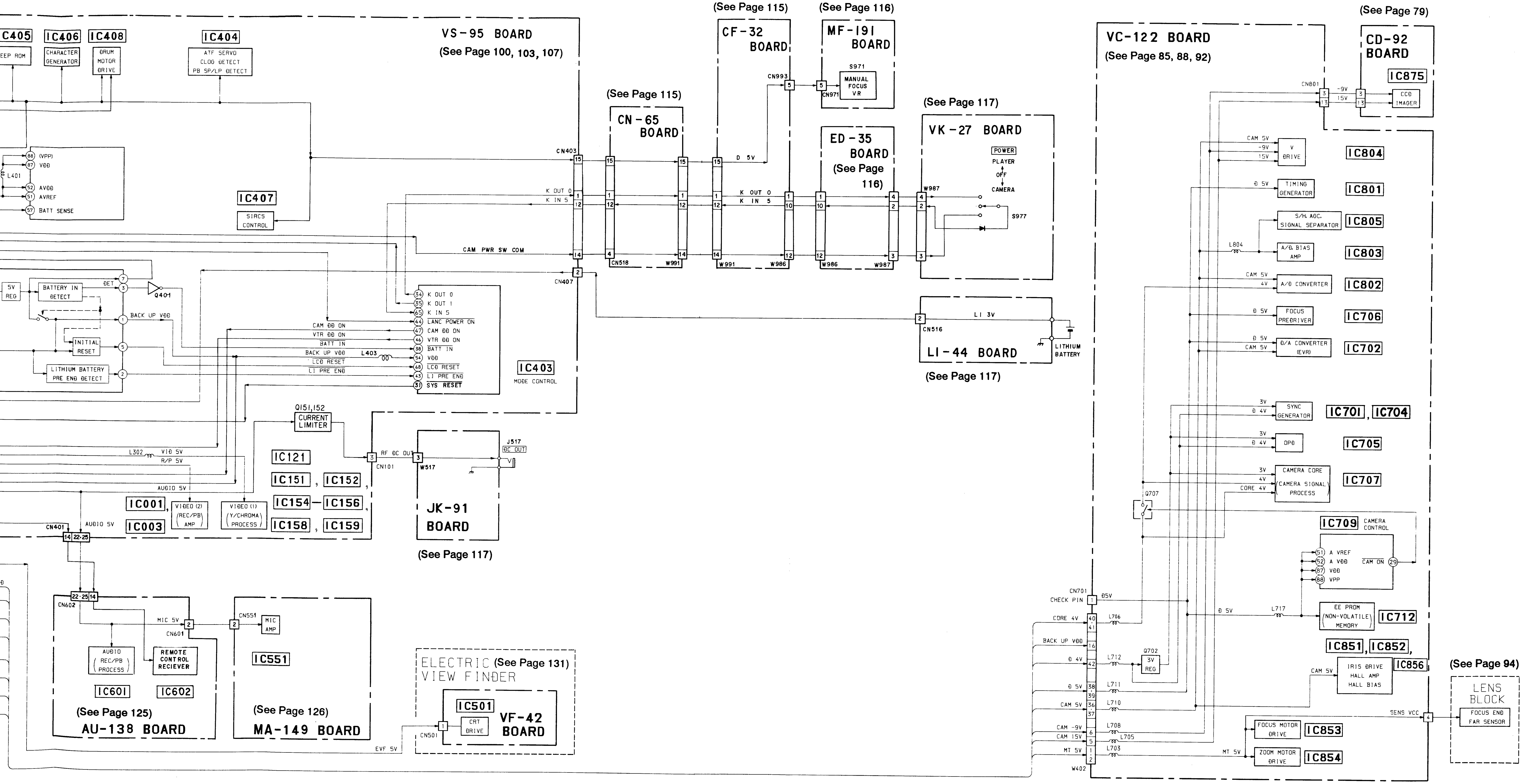
## 3-14. EVF BLOCK DIAGRAM


(See Page 126)
MA-149 BOARD
Q551 LOW-CUT FILTER
CN522
MIC
J551 MIC
IC551
MIC AMP
Vcc
MIC Vcc
W551
CN601
AUDIO 5V (CN602 22, 25)
AUDIO MUTE
CN602
AUDIO OUT
W517
CN101
J517 AUDIO OUT
VS-95 BOARD
(See Page 103, 107)
(See Page 117)
JK-91 BOARD
AUDIO MUTE
SP/LP
VA PB MODE
RF SWP
SYSTEM CONTROL (VS-95)
SERVO (VS-95)


Q501 E REC
Q501 E PB
13Vp-p
VF-42 BOARD
(See Page 131)
EVF 5V
D502 TALLY
D501 TALLY
SYSCON (VS-95) TALLY
VIDEO (1) (VS-95) EVF OUT
CN501
IC501 11 REC
IC501 11 PB
1Vp-p
H
IC501 16 REC/PB
2.8Vp-p
RV503 CONTRAST
Q502 VIDEO DRIVE
Q501 VIDEO OUT
W501
G1
V901 PICTURE TUBE
T501 FBT
H
HV
Q504 H OUT
C504 H SIZE
EVF 5V
D503 DUMPER
G2
RV501 H FREQ
IC501
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
EVF 5V
RV504 BRIGHT
CN502
L901 DEFLECTION YOKE
DH2
DH1
EVF 5V
L503 HLC
CN503
DV2
DV1
3Vp-p
IC501 13 REC/PB
RV502 V SIZE
09
2.6Vp-p
V
IC501 5 REC/PB
IC501 3 REC/PB

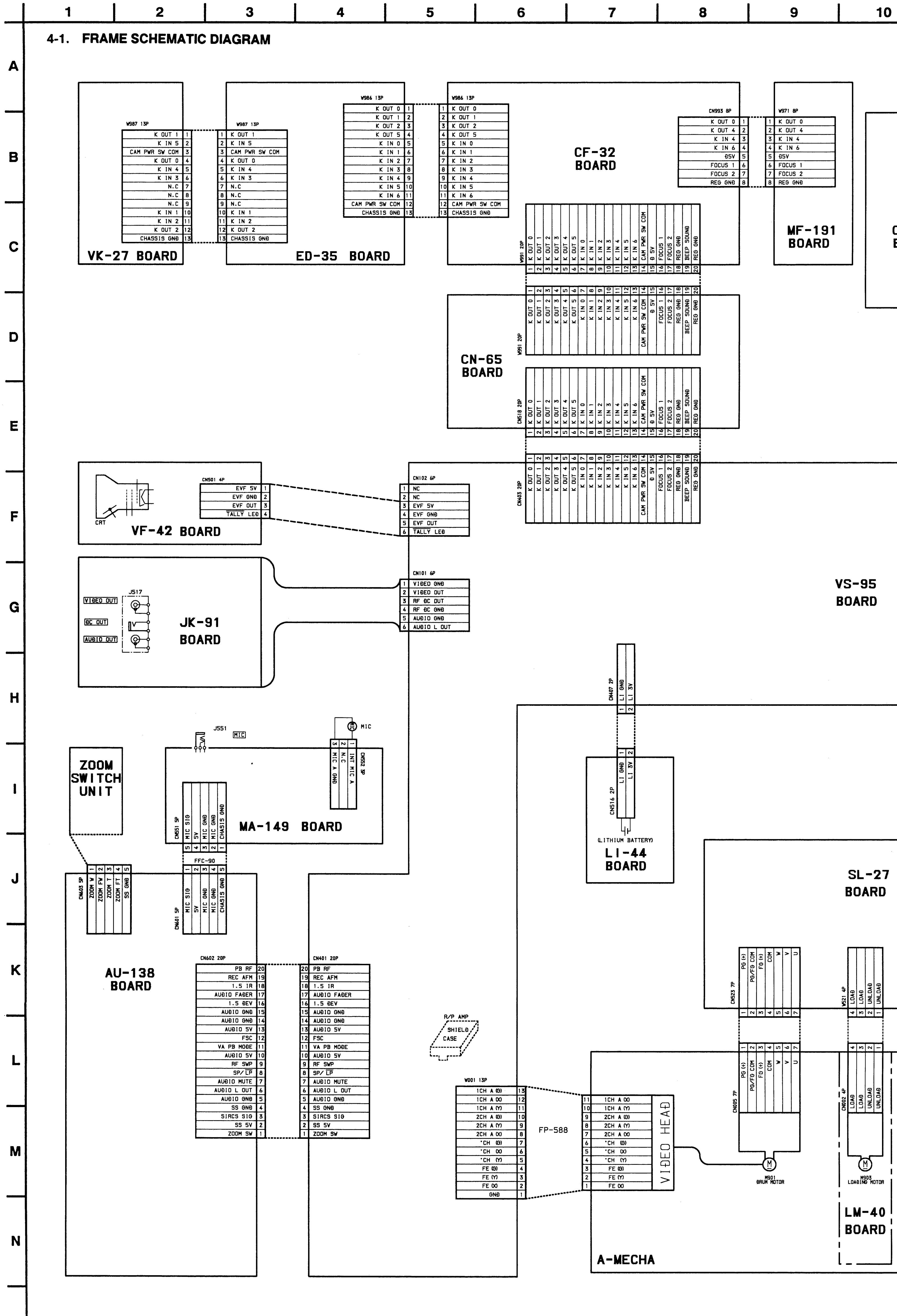
## 3-15. POWER BLOCK DIAGRAM

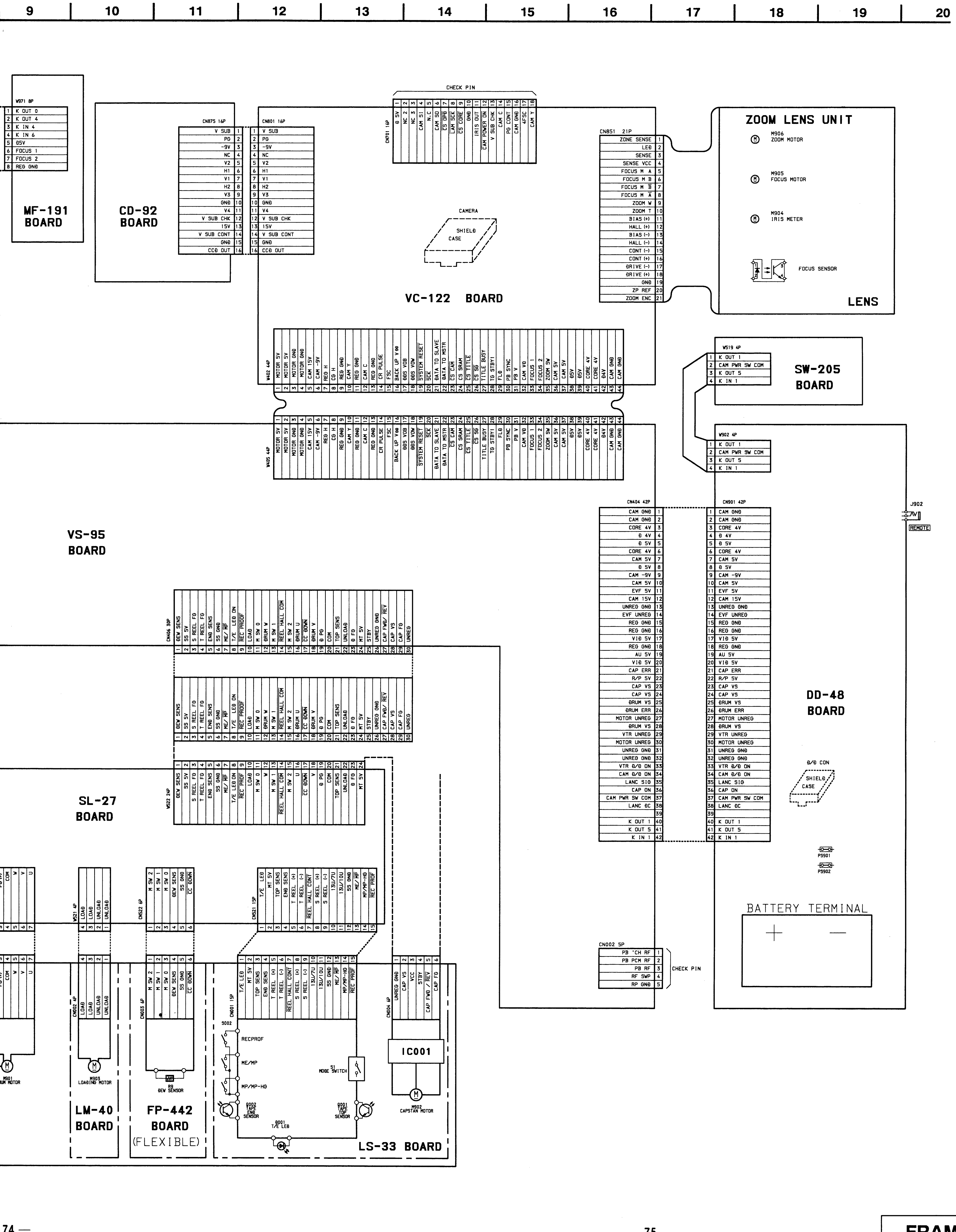

(See Page 137)
SW-205 BOARD
LOCK ← STANDBY
W519
(See Page 118)
MECHA CHASSIS
IC001
CAPSTAN MOTOR DRIVE
TOP, END SENSOR REEL FG
(See Page 119)
SL-27 BOARD
IC521
DFG, DPG AMP REEL FG AMP
CN521
W522
DD-48 BOARD (1/3)
(See Page 137)
CN902
PS902
PS901
J901 BATTERY TERMINAL
VTR UNREG
MOTOR UNREG
CAM UNREG
EVF UNREG
Q905,906 DRUM/CAPSTAN PWM DRIVE (SERVO)
IC901
DC/DC CONVERTER/ (1/2)CAPSTAN,DRUM PWM DRIVE
L903
L904
Q903 SWITCHING
L906
5V
VCC
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF (2.5V)
V REF
VREF (IC901 ⑲)
SHORT CIRCUIT DETECT
Q908,907 4V REG
D 4V
D905
VTR ON
ON/OFF
POWER
SHORT CIRCUIT PROTECT
CAM ON
CTL B
Q904 SWITCHING
T901
D901(1/2) CAM 15V RECT
D901(1/2) CAM -9V RECT
L958
L914
V REF (IC901 ⑲)
CAPSTAN/DRUM PWM DRIVE (SERVO)
Q910 EMERGENCY DETECT
D906
J902 REMOTE
LANC SIG
LANC DC
K OUT 1
CAM PWR SW COM
MOTOR UNREG
VTR UNREG
L909
VID 5V
RP 5V
Q902, 909
EVF UNREG
EVF 5V
L910
AU 5V
L911
D 5V
D 4V
CAM 15V
CAM -9V
L916
CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
CN901
CN404
CN406
5V REG
PS402
IC410
LOADING MOTOR DRIVE
VR
IC405 EEP ROM
IC406 CHARACTER GENERATOR
IC408 DRUM MOTOR DRIVE
SS 5V
MT UNREG
IC402
SERVO/ MECHA CONTROL
L401
(VPP)
VDD
AVDD
AVREF
BATT SENSE
PS401
IC409 LANC I/O
LANC OUT
LANC DC
CURRENT LIMITER
5.6V REG
UNREG
EVER 5V WAKE UP
PWR CONT
IC401
5V REG
BATTERY IN DETECT
DET
Q401
BACK UP VDD
D401
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
L1 3V
L302
VID 5V
R/P 5V
AUDIO 5V
IC001
IC003
CN401
CN102
W405
EVF 5V
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
CN602
CN601
MIC 5V
AUDIO REC/PB PROCESS
REMOTE CONTRO RECIEVE
IC601
IC60
(See Page 125)
AU-138 BOARD


VS-95 BOARD
(See Page 100, 103, 107)
C405
EEP ROM
IC406
CHARACTER GENERATOR
IC408
DRUM MOTOR DRIVE
IC404
ATF SERVO
CLOG DETECT
PB SP/LP DETECT
IC407
SIRCS CONTROL
(VPP)
VDD
L401
AVDD
AVREF
BATT SENSE
5V REG
BATTERY IN DETECT
DET
Q401
BACK UP VDD
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
K OUT 0
K IN 5
CAM PWR SW COM
CN403
CN407
K OUT 0
K OUT 1
K IN 5
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
VDD
LCD RESET
LI PRE END
SYS RESET
L403
IC403
MODE CONTROL
Q151,152
CURRENT LIMITER
L302
VID 5V
R/P 5V
AUDIO 5V
RF DC OUT
CN101
IC121
IC151
IC152
IC154
IC156
IC158
IC159
IC001
IC003
VIDEO (2) (REC/PB) AMP
VIDEO (1) (Y/CHROMA) PROCESS
CN401
AUDIO 5V
(See Page 115)
CN-65 BOARD
CN518
W991
(See Page 115)
CF-32 BOARD
CN993
D 5V
W986
(See Page 116)
MF-191 BOARD
S971
MANUAL FOCUS VR
CN971
ED-35 BOARD
(See Page 116)
W987
(See Page 117)
VK-27 BOARD
POWER
PLAYER
OFF
CAMERA
S977
LI 3V
CN516
LI-44 BOARD
LITHIUM BATTERY
(See Page 117)
J517
DC OUT
W517
JK-91 BOARD
(See Page 117)
CN602
MIC 5V
CN601
AUDIO (REC/PB) PROCESS
REMOTE CONTROL RECIEVER
IC601
IC602
(See Page 125)
AU-138 BOARD
CN551
MIC AMP
IC551
(See Page 126)
MA-149 BOARD
ELECTRIC VIEW FINDER
(See Page 131)
IC501
CRT DRIVE
CN501
VF-42 BOARD
EVF 5V
VC-122 BOARD
(See Page 85, 88, 92)
(See Page 79)
CD-92 BOARD
IC875
CCD IMAGER
CN801
-9V
15V
CAM 5V
V DRIVE
IC804
D 5V
TIMING GENERATOR
IC801
S/H, AGC, SIGNAL SEPARATOR
IC805
L804
A/D BIAS AMP
IC803
CAM 5V
4V
A/D CONVERTER
IC802
FOCUS PREDRIVER
IC706
D/A CONVERTER (EVR)
IC702
3V
D 4V
SYNC GENERATOR
IC701
IC704
OPD
IC705
CAMERA CORE (CAMERA SIGNAL PROCESS)
CORE 4V
IC707
Q707
IC709
CAMERA CONTROL
A VREF
A VDD
VDD
VPP
CAM ON
CN701
CHECK PIN
D5V
L717
EE PROM (NON-VOLATILE MEMORY)
IC712
IC851
IC852
IC856
IRIS DRIVE
HALL AMP
HALL BIAS
CORE 4V
BACK UP VDD
L706
L712
Q702
3V REG
L711
L710
CAM -9V
CAM 15V
L708
L705
L703
MT 5V
W402
SENS VCC
FOCUS MOTOR DRIVE
IC853
ZOOM MOTOR DRIVE
IC854
(See Page 94)
LENS BLOCK
FOCUS END FAR SENSOR

## SECTION 4
## PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

### 4-1. FRAME SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
VK-27 BOARD
W987 13P
ED-35 BOARD
W986 13P
CF-32 BOARD
CN993 8P
W971 8P
MF-191 BOARD
W991 20P
CN-65 BOARD
CN518 20P
CN403 20P
VF-42 BOARD
CRT
CN501 4P
CN102 6P
JK-91 BOARD
J517
VIDEO OUT
DC OUT
AUDIO OUT
CN101 6P
VS-95 BOARD
CN407 2P
ZOOM SWITCH UNIT
J551
MIC
CN552 3P
MA-149 BOARD
CN551 5P
FFC-90
LI-44 BOARD
(LITHIUM BATTERY)
CN516 2P
AU-138 BOARD
CN403 5P
CN401 5P
CN602 20P
CN401 20P
R/P AMP SHIELD CASE
W001 13P
FP-588
VIDEO HEAD
A-MECHA
SL-27 BOARD
CN523 7P
W521 4P
CN005 7P
CN002 4P
M901 DRUM MOTOR
M903 LOADING MOTOR
LM-40 BOARD


9
10
11
12
13
14
15
16
17
18
19
20
MF-191 BOARD
CD-92 BOARD
W971 8P
CN875 16P
CN801 16P
CHECK PIN
CN701 16P
CAMERA
SHIELD CASE
VC-122 BOARD
CN851 21P
ZOOM LENS UNIT
M906 ZOOM MOTOR
M905 FOCUS MOTOR
M904 IRIS METER
FOCUS SENSOR
LENS
W402 44P
W405 44P
W519 4P
SW-205 BOARD
W902 4P
CN404 42P
CN901 42P
J902
REMOTE
VS-95 BOARD
CN406 30P
W522 24P
SL-27 BOARD
DD-48 BOARD
D/D CON
SHIELD CASE
PS901
PS902
BATTERY TERMINAL
CN002 5P
CHECK PIN
W521 4P
CN522 6P
CN521 15P
CN002 4P
CN003 6P
CN001 15P
CN004 6P
M901
M903 LOADING MOTOR
S9 DEW SENSOR
S002
RECPROF
ME/MP
MP/MP-HG
S1 MODE SWITCH
Q002 TAPE END SENSOR
Q001 TAPE TOP SENSOR
D001 T/E LED
IC001
M902 CAPSTAN MOTOR
LM-40 BOARD
FP-442 BOARD (FLEXIBLE)
LS-33 BOARD

## 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

### THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

**(In addition to this , the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing. (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through hole.

* Caution:

| | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- ━━ : B+ Line.*
- - - - : B– Line.*
- ⇨ : IN/OUT direction of (+, – ) B LINE.*
- Circled numbers refer to waveforms.*

**Note:**
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

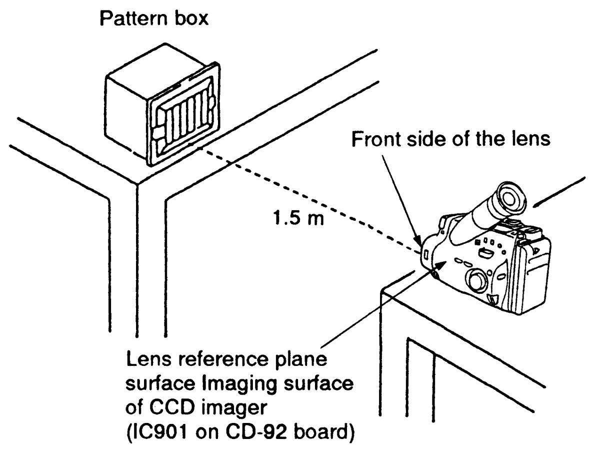
*: indicated by the color red.

- **Measuring conditions voltage value and waveform.**

**(CAMERA, DIGITAL TITLE block)**

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.* Readings are taken with a digital multimeter (DC 10MΩ ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-92 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

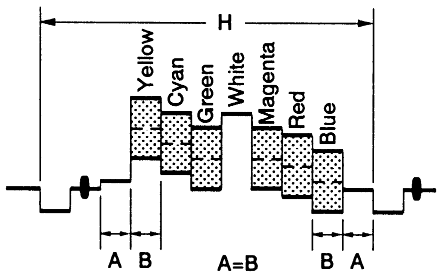


Fig. a (Video output terminal output waveform)

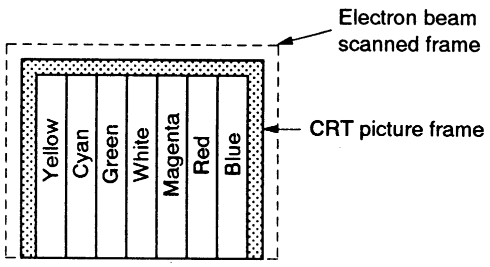


Fig. b (Picture on monitor TV)

**(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, VIEW FINDER block)**

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ ).*
- Voltage variations may be noted due to normal production tolerances.*

## CD-92 (CCD IMAGER) PRINTED WIRING BOAR

— Ref. No. CD-92 BOARD: 1000 series —

- **For printed wiring boards.**
- CD-92 board is the printed wiring board which has structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

| | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side s the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen parts face are indicated. |

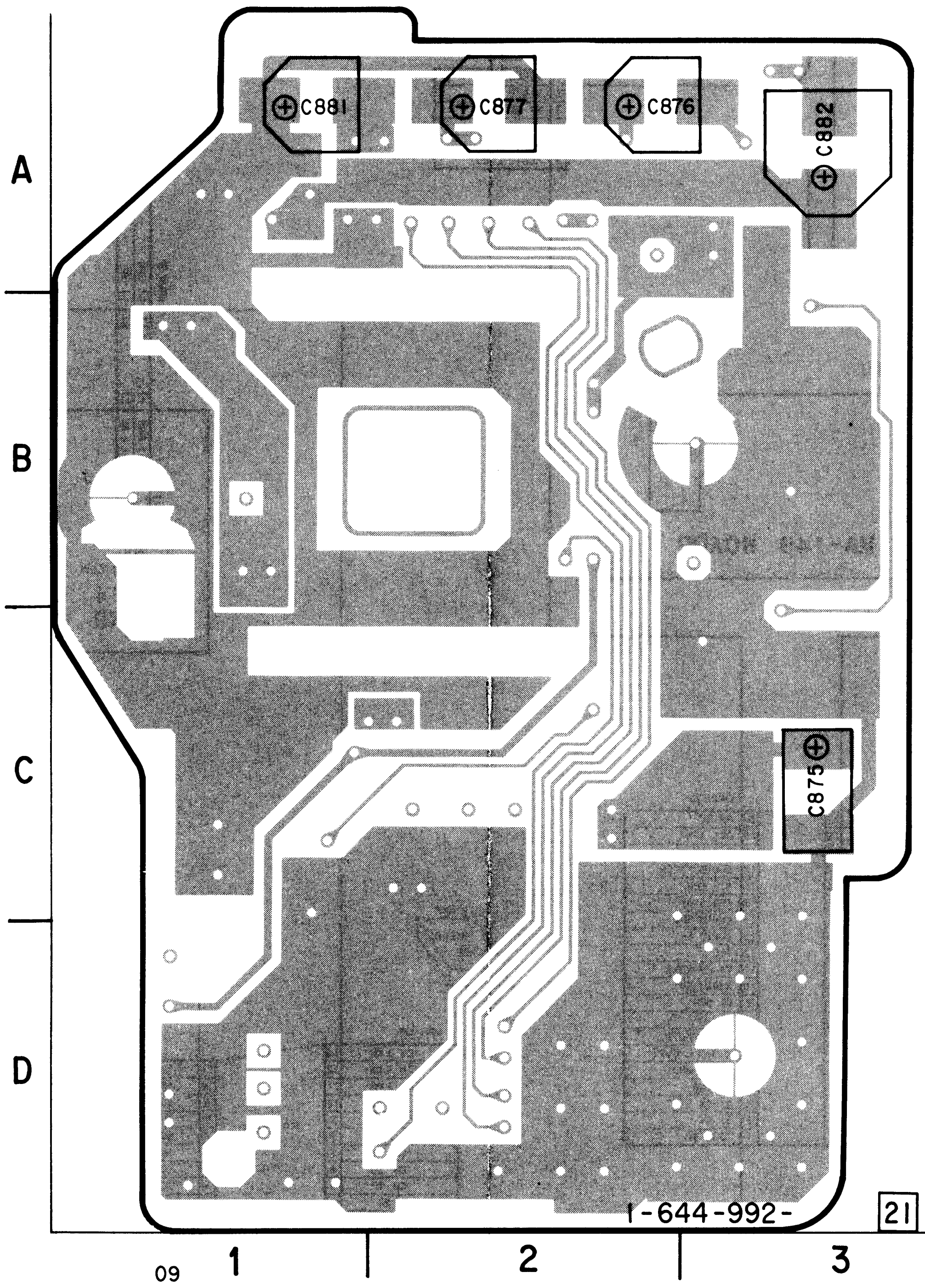
```
                  ( DIODE )

D875   8-719-800-76 DIODE 1SS123
D876   8-719-404-46 DIODE MA110
D877   8-719-820-05 DIODE 1SS181
D878   8-719-404-46 DIODE MA110

                  ( TRANSISTOR )

Q875   8-729-425-64 TRANSISTOR 2SD2216Q
Q876   8-729-427-72 TRANSISTOR XP4501
Q877   8-729-232-86 TRANSISTOR 2SK1875
```

OARD

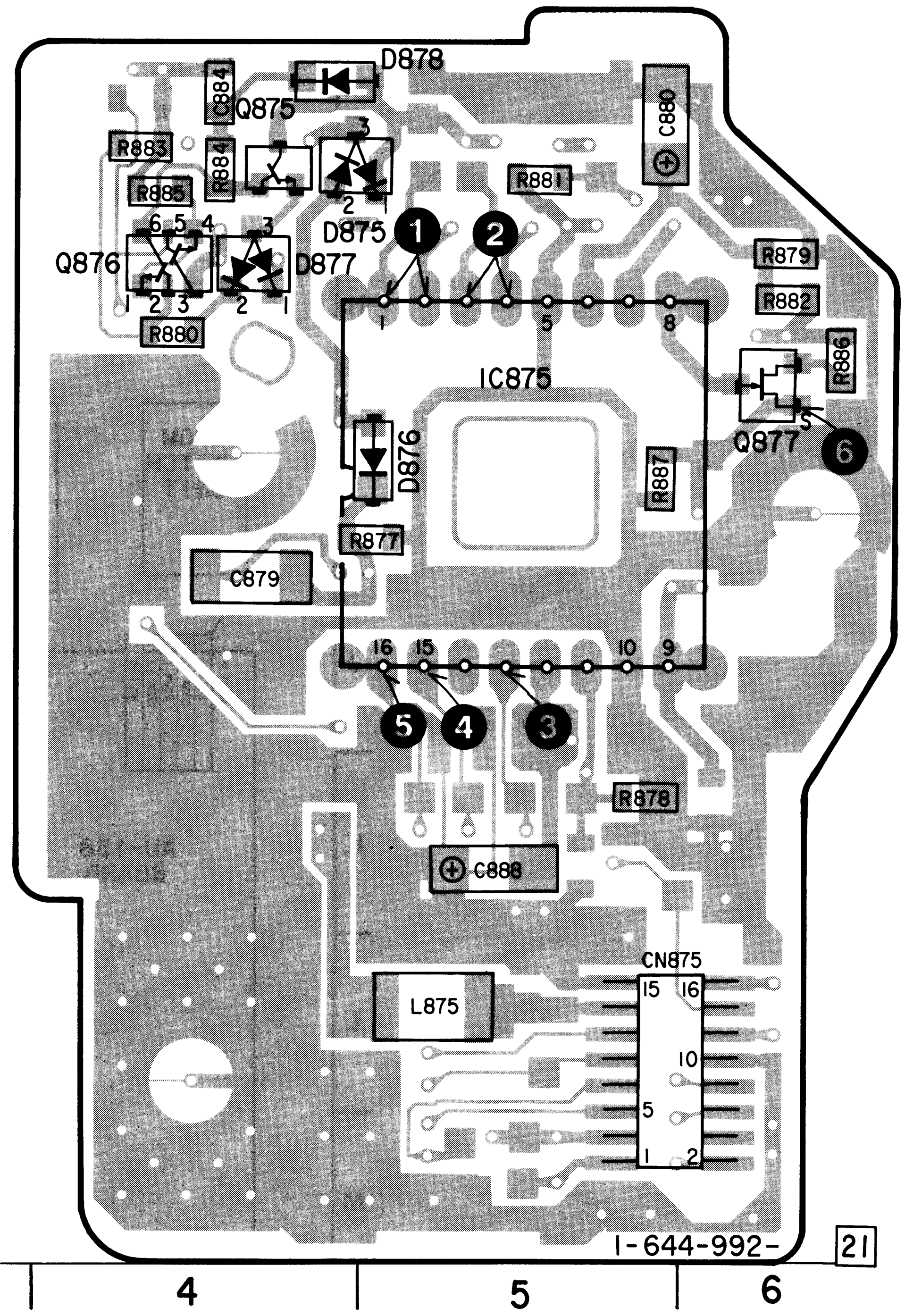
n has four layers
ed.

side seen from
ed.
e seen from the

## CD-92 BOARD (COMPONENT SIDE)


C881
C877
C876
C882
C875
1-644-992-
21
A
B
C
D
1
2
3

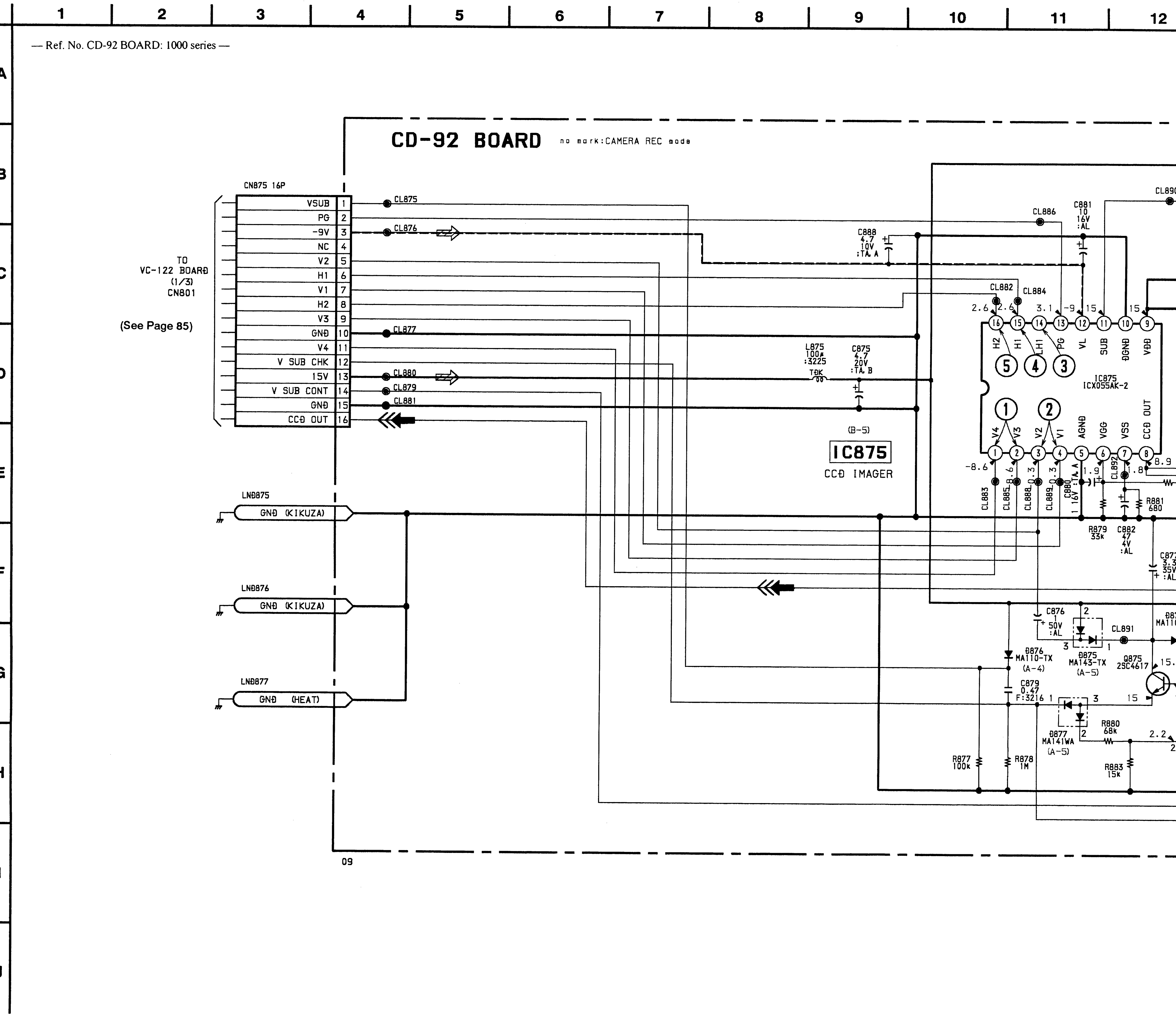
## CD-92 BOARD (CONDUCTOR SIDE)

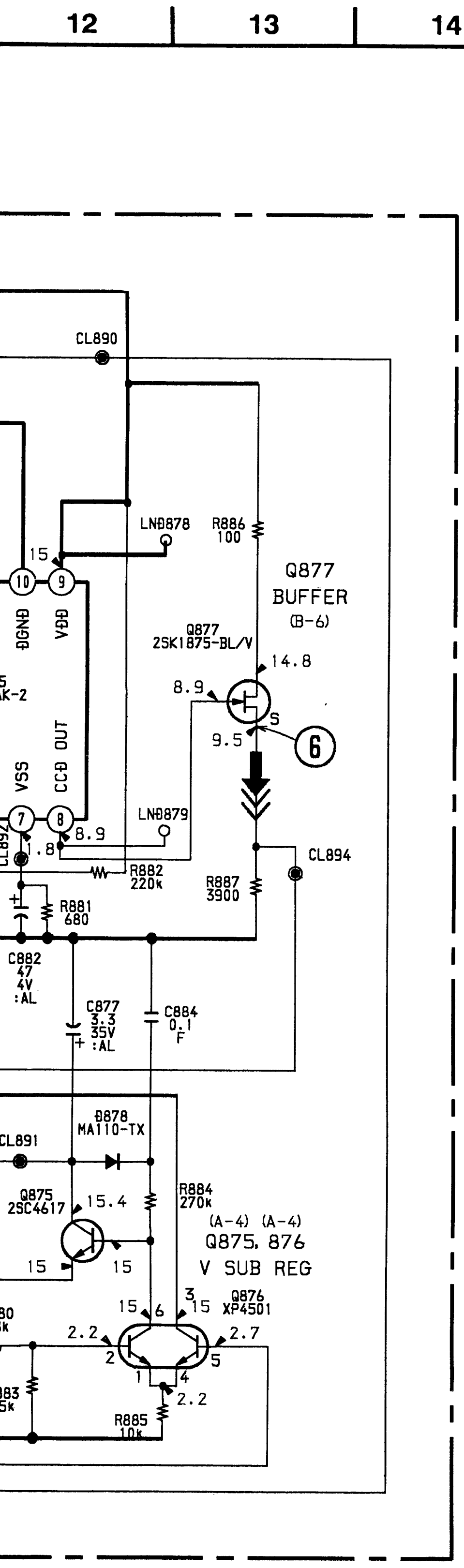

D878
C884
Q875
C880
R883
R884
R885
D875
1
2
Q876
6 5 4
1 2 3
D877
3
2 1
R880
R881
R879
R882
R886
IC875
1
5
8
Q877
6
D876
R887
R877
C879
16 15
10 9
5
4
3
R878
C888
CN875
15 16
10
5
1 2
L875
1-644-992-
21
4
5
6

09

## CD-92 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-92 BOARD: 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
I
J
CD-92 BOARD
no mark:CAMERA REC mode
CN875 16P
VSUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
V SUB CHK 12
15V 13
V SUB CONT 14
GND 15
CCD OUT 16
TO VC-122 BOARD (1/3) CN801
(See Page 85)
CL875
CL876
CL877
CL880
CL879
CL881
LND875
GND (KIKUZA)
LND876
GND (KIKUZA)
LND877
GND (HEAT)
09
C888 4.7 10V :TA, A
L875 100µ :3225 TDK
C875 4.7 20V :TA, B
(B-5)
IC875
CCD IMAGER
CL886
C881 10 16V :AL
CL890
CL882
CL884
2.6
2.6
3.1
-9
15
15
H2
H1
LH1
PG
VL
SUB
DGND
VDD
5
4
3
IC875 ICX055AK-2
1
2
V4
V3
V2
V1
AGND
VGG
VSS
CCD OUT
-8.6
8.6
0.3
0.3
1.9
1.8
8.9
CL883
CL885
CL888
CL889
C880 1 16V :TA, A
CL892
R879 33k
C882 47 4V :AL
R881 680
C877 3.3 35V :AL
C876 1 50V :AL
CL891
D876 MA110-TX (A-4)
D875 MA143-TX (A-5)
Q875 2SC4617
15.
C879 0.47 F:3216
D877 MA141WA (A-5)
R880 68k
2.2
15
R877 100k
R878 1M
R883 15k


12
13
14
15
16
17
18
19
20
21
22
CL890
LN8878
R886 100
15
10
9
DGND
VDD
Q877 BUFFER (B-6)
Q877 2SK1875-BL/V
14.8
8.9
9.5
S
6
VSS
CCD OUT
7
8
LN8879
8.9
1.8
R882 220k
R887 3900
CL894
R881 680
C882 47 4V :AL
C877 3.3 35V :AL
C884 0.1 F
Q878 MA110-TX
CL891
Q875 2SC4617
15.4
R884 270k
(A-4) (A-4)
Q875, 876 V SUB REG
15
15
15
6
3
15
Q876 XP4501
2.2
2.7
2
1
4
5
2.2
R885 10k

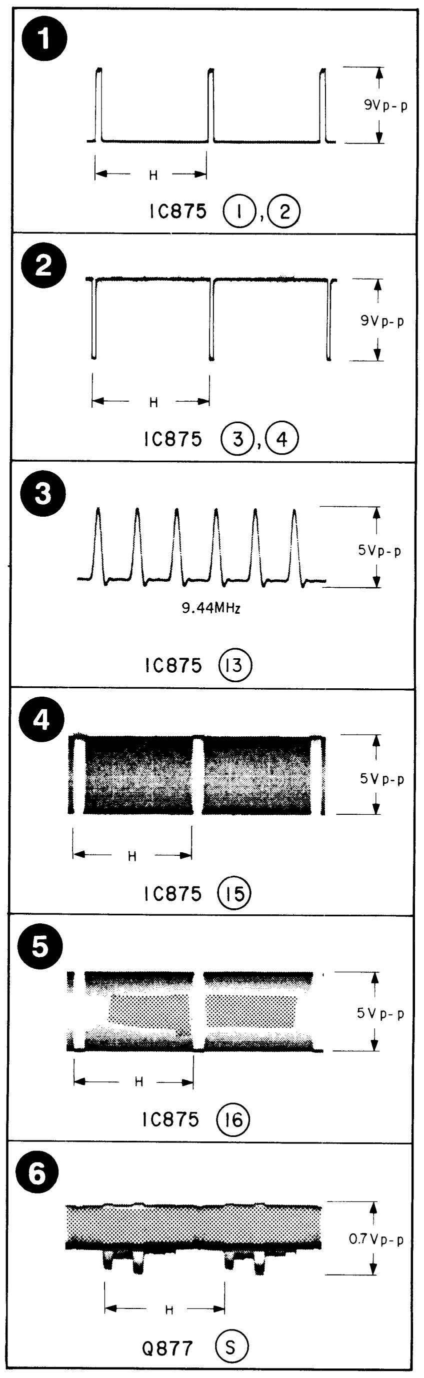
**Note on the CCD imager replacement**

- Some of this units require the correction data by the CCD imager (IC901 on CD-92 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-122 board), and also written on the CCD data label put on the shield case (upper) of the DD-48 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-92 board supplied as the repair parts.
  When replacing the CD-92 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➡≫ | |
| PB | | | | |

**CD-92 BOARD**



## VC-122 (CAMERA, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-122 BOARD: 3000 series —

- **For printed wiring boards.**
- VC-122 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

| | |
|---|---|
| Caution: | |
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

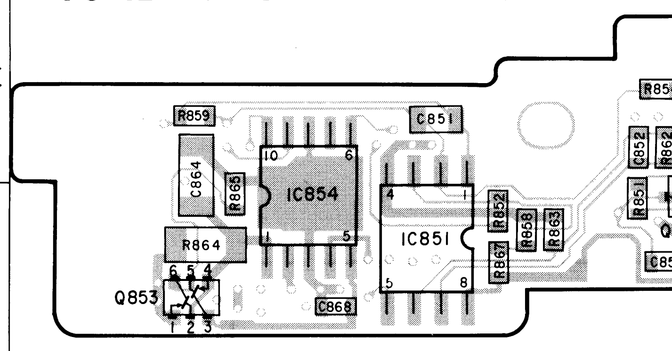
〈 IC 〉

| | | |
|---|---|---|
| IC701 | 8-759-243-19 | IC TC7SU04F |
| IC702 | 8-759-064-36 | IC MB88346BPFV-EF |
| IC703 | 8-759-710-07 | IC NJM2234M |
| IC704 | 8-752-348-92 | IC CXD2101AR |
| IC705 | 8-759-063-18 | IC CXD2103AR |
| IC706 | 8-752-355-56 | IC CXD2104BN |
| IC707 | 8-752-347-93 | IC CXD2100AQ |
| IC709 | 8-752-840-64 | IC CXP80624-434R |
| IC712 | 8-759-073-67 | IC BR9021AF |
| IC801 | 8-752-350-16 | IC CXD1257AR |
| IC802 | 8-752-056-39 | IC CXA1507BR |
| IC803 | 8-752-053-26 | IC CXA1399Q |
| IC804 | 8-752-327-48 | IC CXD1250N |
| IC805 | 8-752-054-61 | IC CXA1390AR |
| IC851 | 8-759-701-24 | IC NJM3414M |
| IC852 | 8-759-998-96 | IC LM324D |
| IC853 | 8-759-058-47 | IC MPC1724VMEL |
| IC854 | 8-759-823-51 | IC LB1830M |
| IC856 | 8-759-998-98 | IC LM358D |

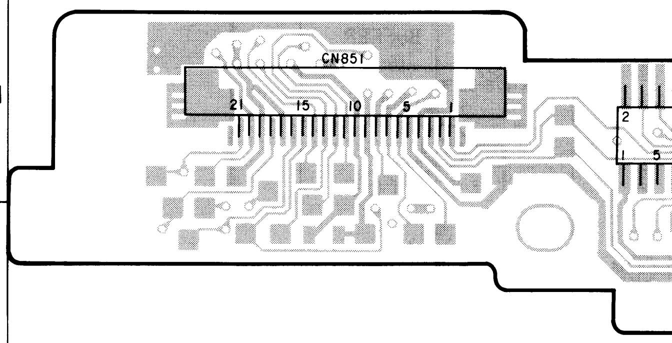
〈 TRANSISTOR 〉

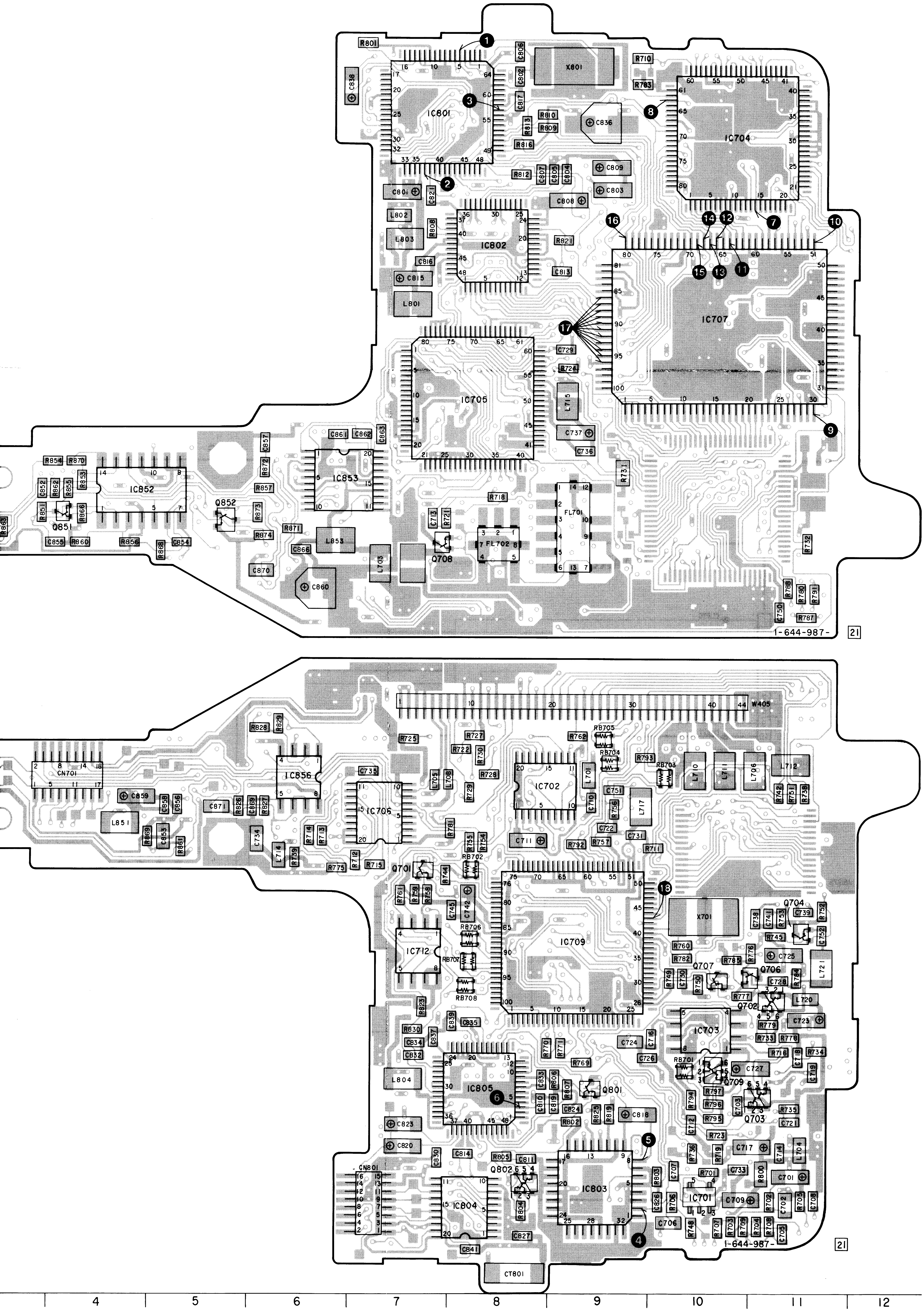
| | | |
|---|---|---|
| Q701 | 8-729-928-87 | TRANSISTOR DTC124EE |
| Q702 | 8-729-427-74 | TRANSISTOR XP4601 |
| Q703 | 8-729-427-74 | TRANSISTOR XP4601 |
| Q704 | 8-729-425-50 | TRANSISTOR 2SB1462Q |
| Q706 | 8-729-425-64 | TRANSISTOR 2SD2216Q |
| Q707 | 8-729-428-84 | TRANSISTOR UN9111 |
| Q708 | 8-729-425-64 | TRANSISTOR 2SD2216Q |
| Q709 | 8-729-427-72 | TRANSISTOR XP4501 |
| Q801 | 8-729-425-64 | TRANSISTOR 2SD2216Q |
| Q802 | 8-729-427-70 | TRANSISTOR XP4401 |
| Q851 | 8-729-425-64 | TRANSISTOR 2SD2216Q |
| Q852 | 8-729-013-88 | TRANSISTOR RN1302 |
| Q853 | 8-729-427-70 | TRANSISTOR XP4401 |

**VC-122** BOARD (COMPONENT SIDE)



**VC-122** BOARD (CONDUCTOR SIDE)

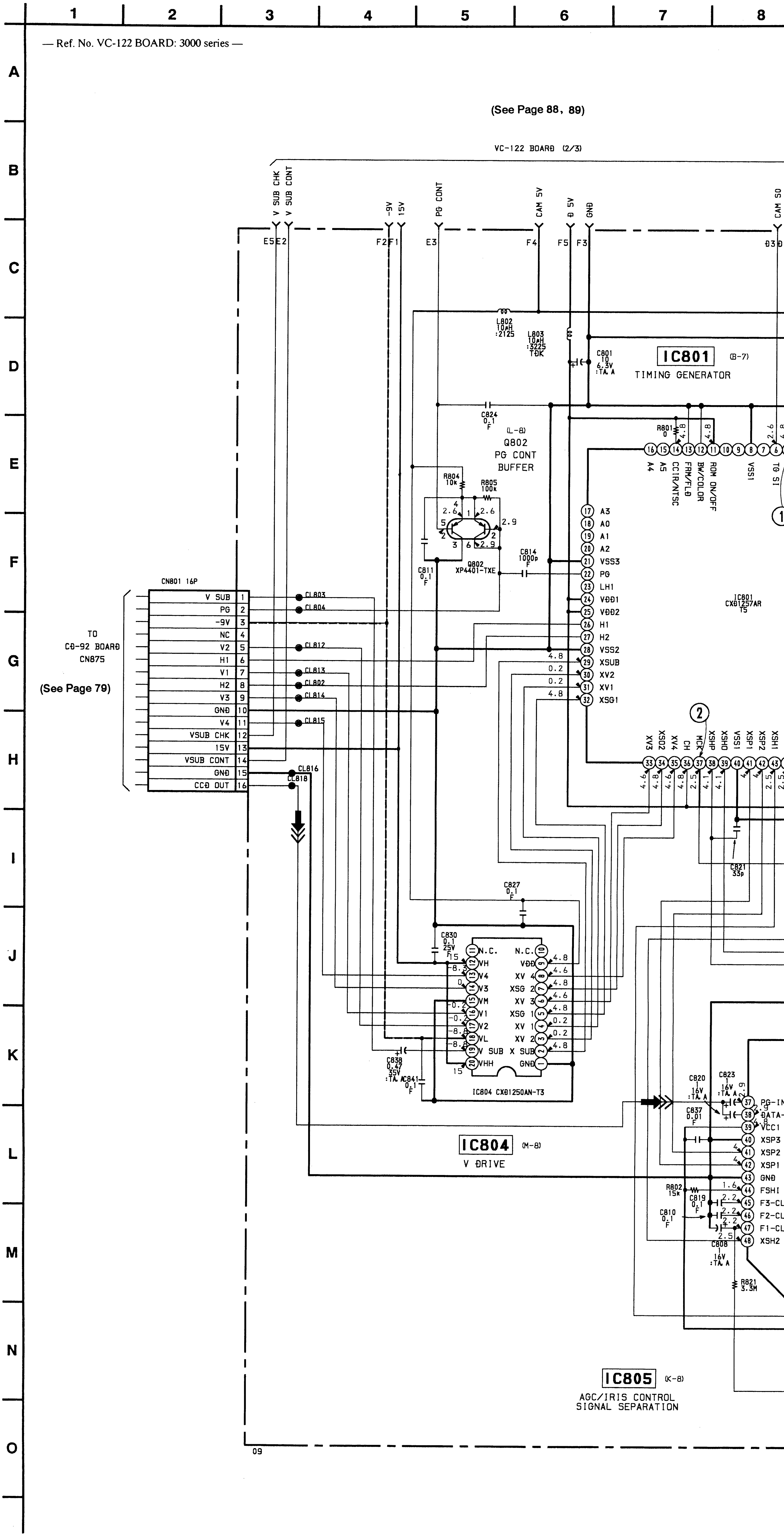



IC801
IC802
IC704
IC707
IC705
IC852
IC853
FL701
FL702
Q851
Q852
Q708
X801
L801
L802
L803
L853
L703
L715
C836
C860
1-644-987-
21
W405
CN701
IC856
IC706
IC702
IC709
IC712
IC703
IC805
IC803
IC804
IC701
CN801
CT801
X701
L851
L804
L710
L711
L706
L712
L717
L714
L721
L720
L704
Q701
Q704
Q707
Q706
Q702
Q709
Q703
Q801
Q802
RB701
RB702
RB703
RB704
RB705
RB706
RB707
RB708
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
4
5
6
7
8
9
10
11
12

## VC-122 (CAMERA) SCHEMATIC DIAGRAM

• Refer to page 82 for Printed Wiring Board.

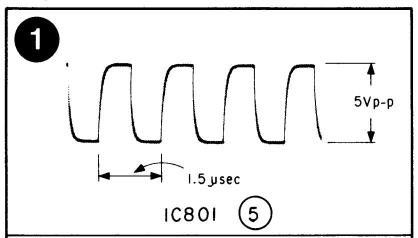
— Ref. No. VC-122 BOARD: 3000 series —


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
(See Page 88, 89)
VC-122 BOARD (2/3)
V SUB CHK
V SUB CONT
-9V
15V
PG CONT
CAM 5V
D 5V
GND
CAM SO
E5
E2
F2
F1
E3
F4
F5
F3
L802 10µH :2125
L803 10µH :3225 TDK
C801 10 6.3V :TA A
IC801 (B-7)
TIMING GENERATOR
C824 0.1 F
(L-8) Q802 PG CONT BUFFER
R804 10k
R805 100k
C811 0.1 F
Q802 XP4401-TXE
C814 1000p F
R801 0
A4
A5
CCIR/NTSC
FRM/FLD
BW/COLOR
ROM ON/OFF
VSS1
TO SI
A3
A0
A1
A2
VSS3
PG
LH1
VDD1
VDD2
H1
H2
VSS2
XSUB
XV2
XV1
XSG1
IC801 CXD1257AR T5
XV3
XSG2
XV4
CH
MCK
XSHP
VSS1
XSP1
XSP2
XSH1
TO CD-92 BOARD CN875
(See Page 79)
CN801 16P
V SUB
PG
-9V
NC
V2
H1
V1
H2
V3
GND
V4
VSUB CHK
15V
VSUB CONT
GND
CCD OUT
CL803
CL804
CL812
CL813
CL802
CL814
CL815
CL816
CL818
C821 33p
C827 0.1 F
C830 0.1 25V
N.C.
VH
V4
V3
VM
V1
V2
VL
V SUB
VHH
VDD
XV 4
XSG 2
XV 3
XSG 1
XV 1
XV 2
X SUB
GND
C838 0.47 35V :TA A
C841 0.1 F
IC804 CXD1250AN-T3
IC804 (M-8)
V DRIVE
C820 16V :TA A
C823 1 16V :TA A
C837 0.01 F
PG-IN
DATA-
VCC1
XSP3
XSP2
XSP1
GND
FSHI
F3-CL
F2-CL
F1-CL
XSH2
R802 15k
C819 0.1 F
C810 0.1 F
C808 16V :TA A
R821 3.3M
IC805 (K-8)
AGC/IRIS CONTROL SIGNAL SEPARATION
09

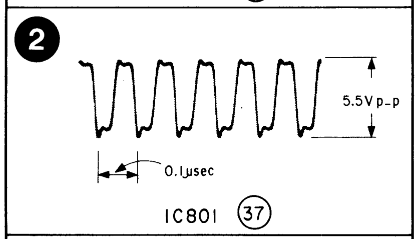
• **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➡≫ | |
| PB | | | | |

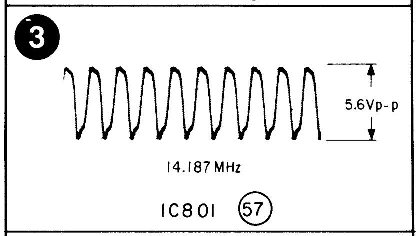
### VC-122 BOARD (1/3)



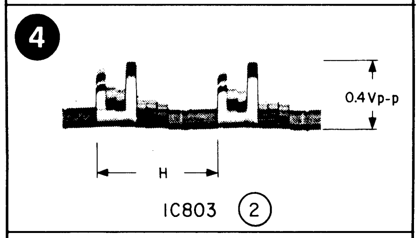
IC801 ⑤



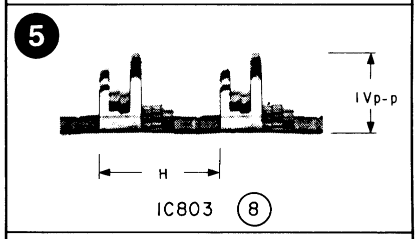
IC801 (37)



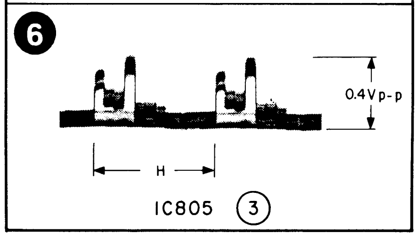
IC801 (57)



IC803 ②



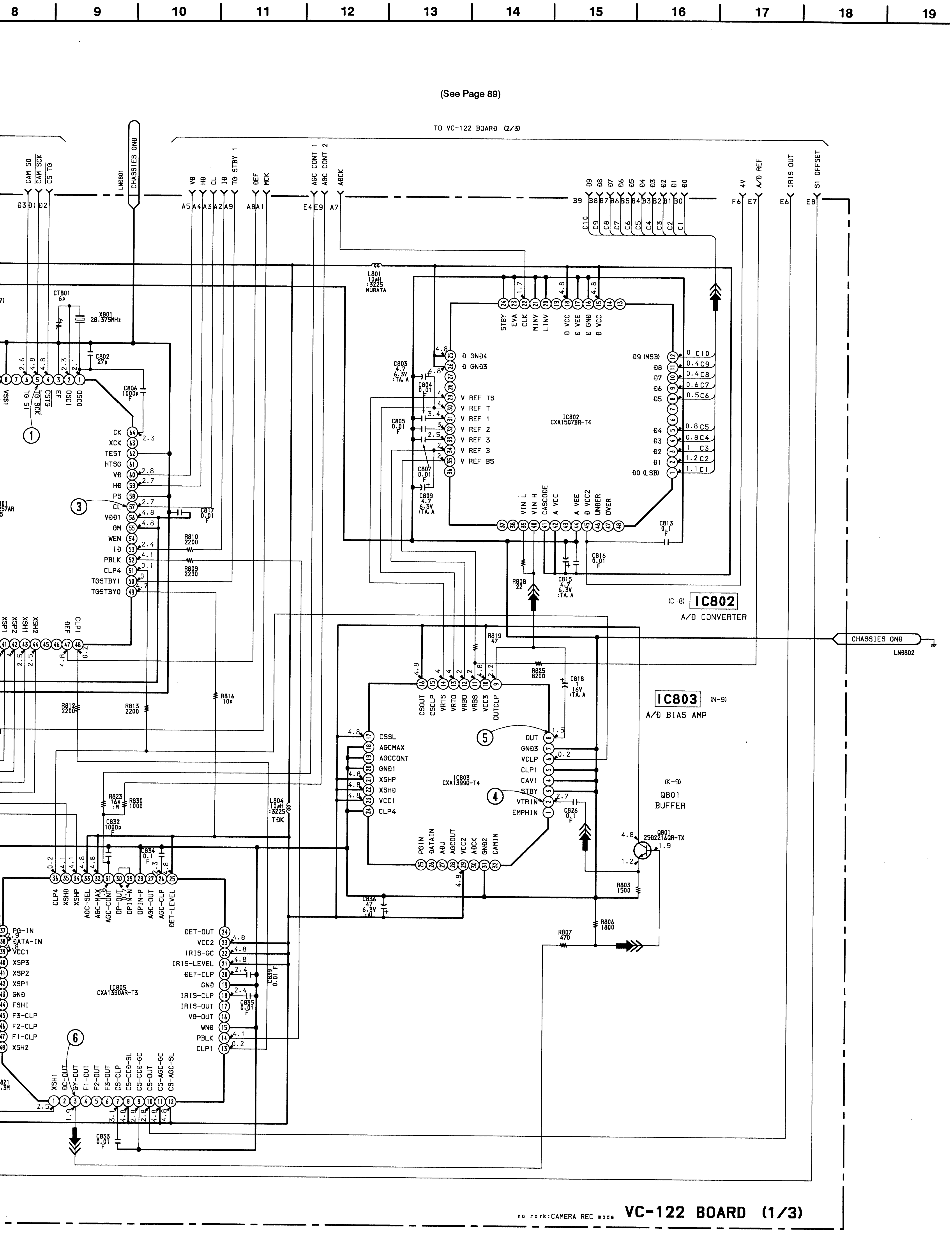
IC803 ⑧



IC805 ③

(See Page 89)

TO VC-122 BOARD (2/3)

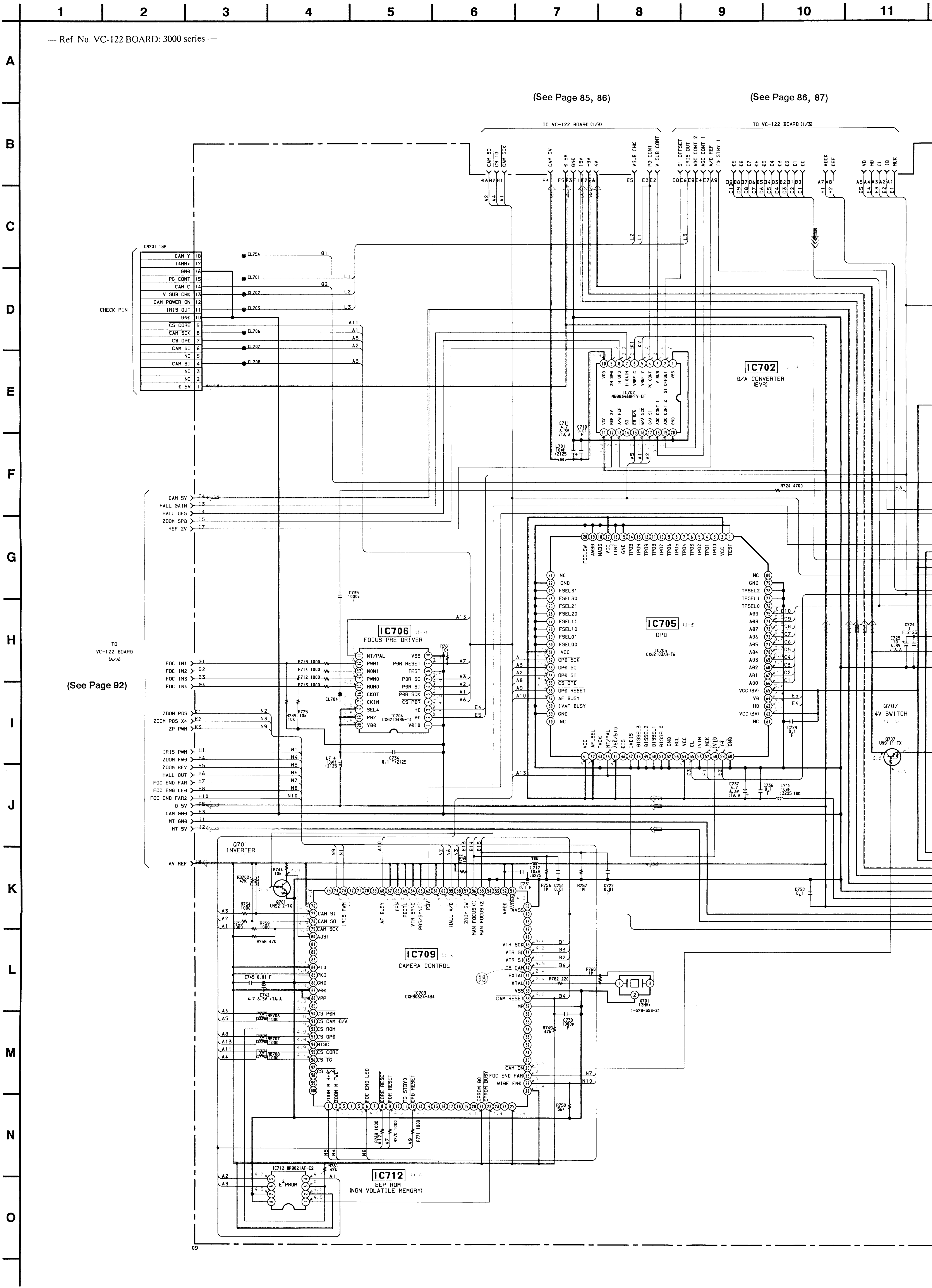

8
9
10
11
12
13
14
15
16
17
18
19
CAM SO
CAM SCK
CS TG
CHASSIES GND
LND801
VD
HD
CL
ID
TG STBY 1
DEF
MCK
AGC CONT 1
AGC CONT 2
ADCK
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
4V
A/D REF
IRIS OUT
S1 OFFSET
B9
F6
E7
E6
E8
L801
10μH
:3225
MURATA
CT801
6p
X801
28.375MHz
C802
27p
C806
1000p
VSS1
TG SI
TG SCK
CSTG
EF
OSC1
OSCO
CK
XCK
TEST
HTSG
VD
HD
PS
CL
VDD1
GM
WEN
ID
PBLK
CLP4
TGSTBY1
TGSTBY0
C817
0.01
R810
2200
R809
2200
XSP1
XSP2
XSH1
XSH2
DEF
CLP1
R812
2200
R813
2200
R816
10k
STBY
EVA
CLK
MINV
LINV
D VCC
D VEE
D GND
D VCC
D GND4
D GND3
V REF TS
V REF T
V REF 1
V REF 2
V REF 3
V REF B
V REF BS
C803
4.7
6.3V
:TA, A
C804
0.01
C805
0.01
C807
0.01
C809
4.7
6.3V
:TA, A
IC802
CXA1507BR-T4
D9 (MSB)
D0 (LSB)
VIN L
VIN H
CASCODE
A VCC
A VEE
D VCC2
UNDER
OVER
C813
0.1
C816
0.01
C815
4.7
6.3V
:TA, A
R808
22
(C-8)
IC802
A/D CONVERTER
CHASSIES GND
LND802
R819
47
R825
8200
C818
1
16V
:TA, A
IC803
(N-9)
A/D BIAS AMP
CSOUT
CSCLP
VRTS
VRTO
VRBO
VRBS
VCC3
OUTCLP
CSSL
AGCMAX
AGCCONT
GND1
XSHP
XSHD
VCC1
CLP4
IC803
CXA1399Q-T4
OUT
GND3
VCLP
CLP1
CAV1
STBY
VTRIN
EMPHIN
C826
0.1
PGIN
DATAIN
ADJ
AGCOUT
VCC2
ADCK
GND2
CAMIN
(K-9)
Q801
BUFFER
Q801
2SD2216QR-TX
R803
1500
C836
47
6.3V
:AI
R806
1800
R807
470
L804
10μH
:3225
TDK
R823
16k
:M
R830
1000
C832
1000p
C834
0.1
CLP4
XSHD
XSHP
AGC-SEL
AGC-MAX
AGC-CONT
OP-OUT
OPIN-N
OPIN-P
AGC-OUT
AGC-CLP
DET-LEVEL
PG-IN
DATA-IN
VCC1
XSP3
XSP2
XSP1
GND
FSHI
F3-CLP
F2-CLP
F1-CLP
XSH2
IC805
CXA1390AR-T3
DET-OUT
VCC2
IRIS-GC
IRIS-LEVEL
DET-CLP
GND
IRIS-CLP
IRIS-OUT
VG-OUT
WND
PBLK
CLP1
C839
0.01
C835
0.01
XSH1
DC-OUT
GY-OUT
F1-OUT
F2-OUT
F3-OUT
CS-CLP
CS-CCD-SL
CS-CCD-GC
CS-AGC-GC
CS-AGC-SL
C833
0.01
R821
3.3M
①
③
④
⑤
⑥

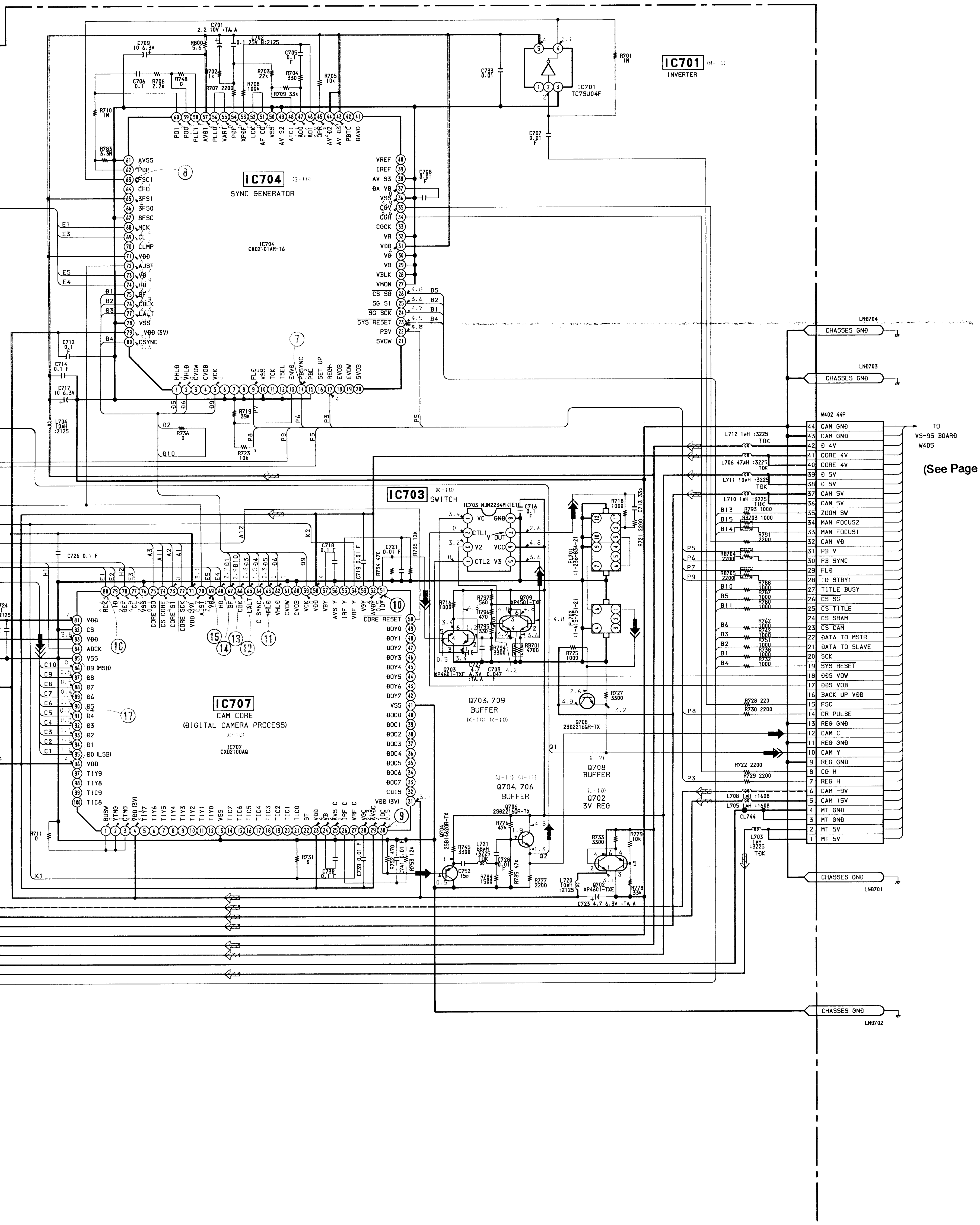
no mark:CAMERA REC mode

## VC-122 BOARD (1/3)

## VC-122 (CAMERA) SCHEMATIC DIAGRAM

- Refer to page 82 for Printed Wiring Board.


— Ref. No. VC-122 BOARD: 3000 series —
(See Page 85, 86)
(See Page 86, 87)
TO VC-122 BOARD (1/3)
TO VC-122 BOARD (1/3)
CAM SO
CS TG
CAM SCK
CAM 5V
D 5V
GND
15V
-5V
4V
VSUB CHK
PG CONT
V SUB CONT
S1 OFFSET
IRIS OUT
AGC CONT 2
AGC CONT 1
A/D REF
TG STBY 1
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
ADCK
DEF
VD
HD
CL
ID
MCK
CN701 18P
CHECK PIN
CAM Y
14MHz
GND
PG CONT
CAM C
V SUB CHK
CAM POWER ON
IRIS OUT
CS CORE
CAM SCK
CS OPD
CAM SO
NC
CAM SI
D 5V
IC702
D/A CONVERTER
(EVR)
IC702
MB88346BPFV-EF
TO
VC-122 BOARD
(3/3)
(See Page 92)
CAM 5V
HALL GAIN
HALL OFS
ZOOM SPD
REF 2V
FOC IN1
FOC IN2
FOC IN3
FOC IN4
ZOOM POS
ZOOM POS X4
ZP PWM
IRIS PWM
ZOOM FWD
ZOOM REV
HALL OUT
FOC END FAR
FOC END LED
FOC END FAR2
D 5V
CAM GND
MT GND
MT 5V
AV REF
IC706
FOCUS PRE DRIVER
IC706
CX02104BN-T4
IC705
OPD
IC705
CX02103AR-T6
Q707
4V SWITCH
Q707
UN9111-TX
Q701
INVERTER
Q701
UN9212-TX
IC709
CAMERA CONTROL
IC709
CXP80624-434
X701
12MHz
1-579-553-21
IC712
EEP ROM
(NON VOLATILE MEMORY)
IC712 BR9021AF-E2
E²PROM
1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O


IC701
INVERTER
IC701 TC7SU04F
IC704
SYNC GENERATOR
IC704 CXD2101AR-T6
IC703
SWITCH
IC703 NJM2234M (TE1)
IC707
CAM CORE
(DIGITAL CAMERA PROCESS)
IC707 CXD2100AQ
Q703, 709
BUFFER
Q704, 706
BUFFER
Q708
BUFFER
Q702
3V REG
W402 44P
44 CAM GND
43 CAM GND
42 D 4V
41 CORE 4V
40 CORE 4V
39 D 5V
38 D 5V
37 CAM 5V
36 CAM 5V
35 ZOOM SW
34 MAN FOCUS2
33 MAN FOCUS1
32 CAM VD
31 PB V
30 PB SYNC
29 FLD
28 TG STBY1
27 TITLE BUSY
26 CS SG
25 CS TITLE
24 CS SRAM
23 CS CAM
22 DATA TO MSTR
21 DATA TO SLAVE
20 SCK
19 SYS RESET
18 DDS VDW
17 DDS VDB
16 BACK UP VDD
15 FSC
14 CR PULSE
13 REG GND
12 CAM C
11 REG GND
10 CAM Y
9 REG GND
8 CG H
7 REG H
6 CAM -9V
5 CAM 15V
4 MT GND
3 MT GND
2 MT 5V
1 MT 5V
TO
VS-95 BOARD
W405
CHASSES GND
LND704
LND703
LND701
LND702
(See Page 108)

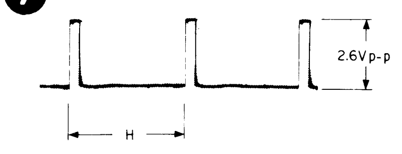
- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡ | ➡ | |
| PB | | | | |

au mark:CAMERA REC mode **VC-122 BOARD (2/3)**

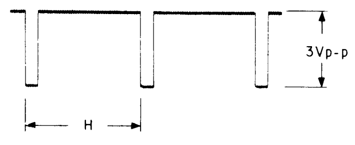
## VC-122 BOARD (2/3)

⑦



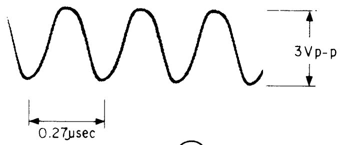
IC704 ⑭

⑭



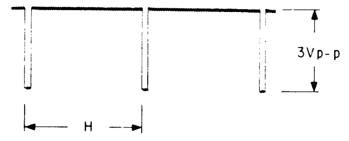
IC707 (68)

⑧



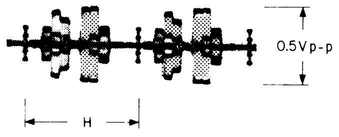
IC704 (63)

⑮



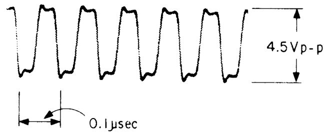
IC707 (69)

⑨



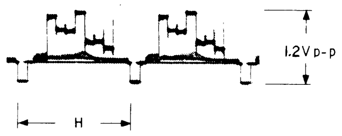
IC707 (30)

⑯



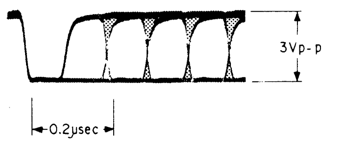
IC707 (80)

⑩



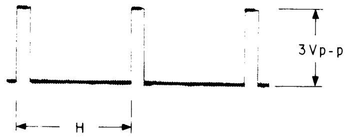
IC707 (51)

⑰



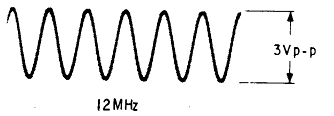
IC707 (86) - (95)

⑪



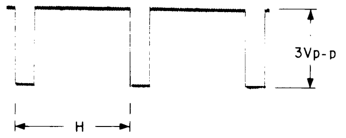
IC707 (64)

⑱



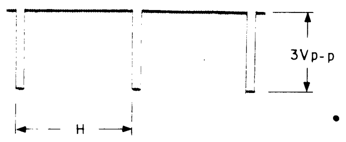
IC709 (41)

⑫



IC707 (66)

⑬

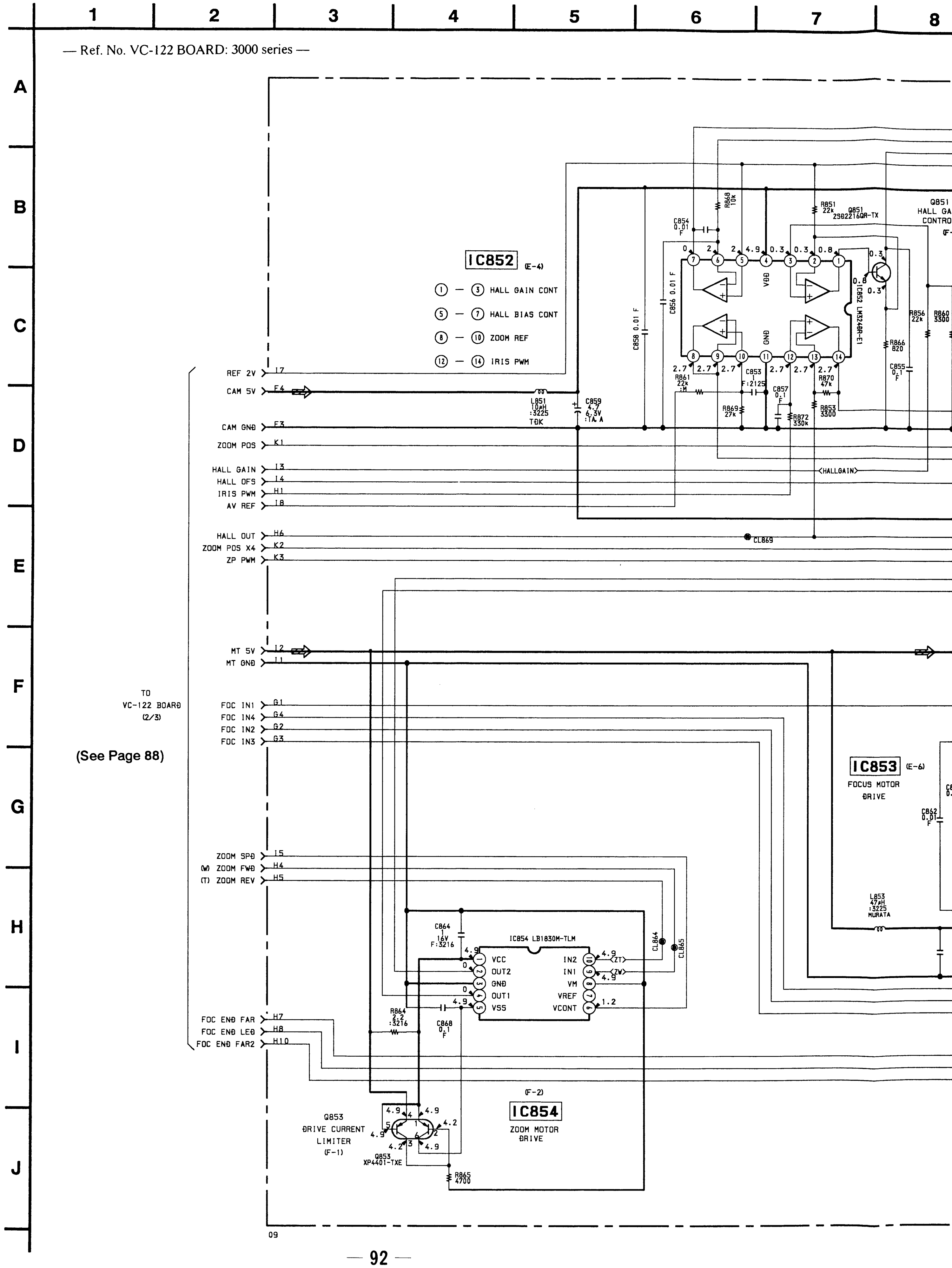


IC707 (67)

## VC-122 (LENS DRIVE) SCHEMATIC DIAGRAM

• Refer to page 82 for Printed Wiring Board.

— Ref. No. VC-122 BOARD: 3000 series —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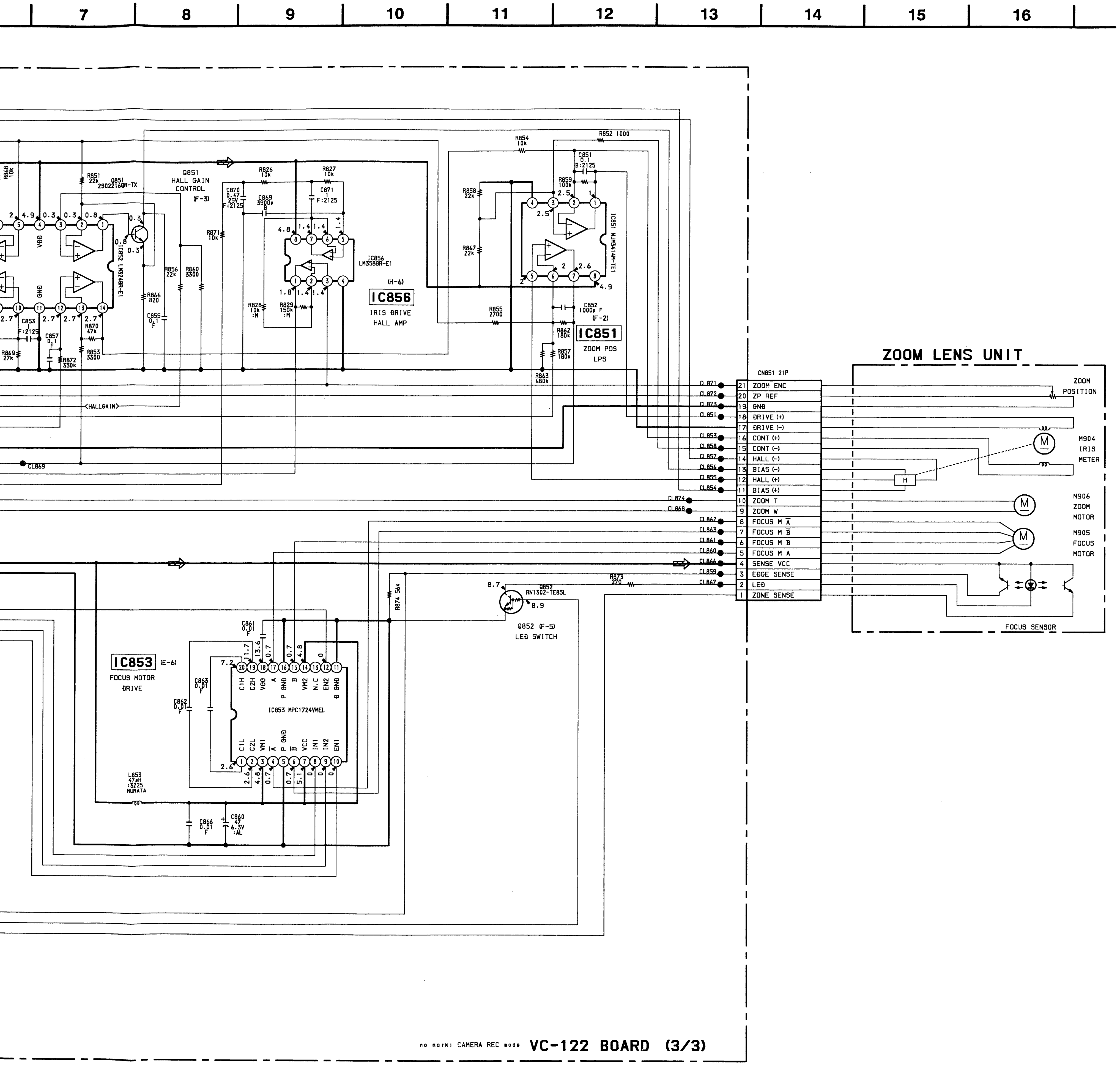
I
J
IC852 (E-4)
① — ③ HALL GAIN CONT
⑤ — ⑦ HALL BIAS CONT
⑧ — ⑩ ZOOM REF
⑫ — ⑭ IRIS PWM
REF 2V
CAM 5V
CAM GND
ZOOM POS
HALL GAIN
HALL OFS
IRIS PWM
AV REF
HALL OUT
ZOOM POS X4
ZP PWM
MT 5V
MT GND
FOC IN1
FOC IN4
FOC IN2
FOC IN3
ZOOM SPD
(W) ZOOM FWD
(T) ZOOM REV
FOC ENC FAR
FOC ENC LED
FOC ENC FAR2
TO
VC-122 BOARD
(2/3)
(See Page 88)
L851
10μH
:3225
TDK
C859
4.7
6.3V
:TA A
C858 0.01 F
C856 0.01 F
C854
0.01
F
R868
10k
R851
22k
Q851
2SD2216QR-TX
Q851
HALL GAIN
CONTRO
IC852 LM324QR-E1
VDD
GND
R861
22k
1M
R869
27k
C853
F:2125
C857
0.1
F
R872
330k
R870
47k
R853
3300
R856
22k
R860
3300
R866
820
C855
0.1
F
<HALLGAIN>
CL869
IC853 (E-6)
FOCUS MOTOR
DRIVE
C862
0.01
F
L853
47μH
:3225
MURATA
C864
1
16V
F:3216
IC854 LB1830M-TLM
VCC
OUT2
GND
OUT1
VSS
IN2
IN1
VM
VREF
VCONT
<ZT>
<ZW>
CL864
CL865
R864
2.2
:3216
C868
0.1
F
Q853
DRIVE CURRENT
LIMITER
(F-1)
Q853
XP4401-TXE
R865
4700
(F-2)
IC854
ZOOM MOTOR
DRIVE
09


7
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11
12
13
14
15
16
Q851 HALL GAIN CONTROL (F-3)
Q851 2SO2216QR-TX
IC852 LM324QR-E1
IC856 LM358QR-E1
(H-6)
IC856
IRIS DRIVE HALL AMP
IC851 NJM3414M-TE1
IC851
ZOOM POS LPS
(F-2)
R852 1000
R854 10k
R826 10k
R827 10k
R855 2700
R862 180k
R857 180k
R863 680k
<HALLGAIN>
CL869
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (-)
16 CONT (+)
15 CONT (-)
14 HALL (-)
13 BIAS (-)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M A
7 FOCUS M B
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
ZOOM LENS UNIT
ZOOM POSITION
M904 IRIS METER
M906 ZOOM MOTOR
M905 FOCUS MOTOR
FOCUS SENSOR
R873 270
R874 56k
Q852 RN1302-TE85L
Q852 (F-5) LED SWITCH
IC853 (E-6)
FOCUS MOTOR DRIVE
IC853 MPC1724VMEL
C1H C2H VGG A P GND B VM2 N.C EN2 D GND
C1L C2L VM1 A P GND B VCC IN1 IN2 EN1
L853 47μH :3225 MURATA
C866 0.01 F
C860 47 6.3V :AL
no mark: CAMERA REC mode
VC-122 BOARD (3/3)

## VS-95 (REC/PB HEAD AMP, VIDEO, SERVO/SYSTEM CONTROL) PRINTED WIRING BOARD

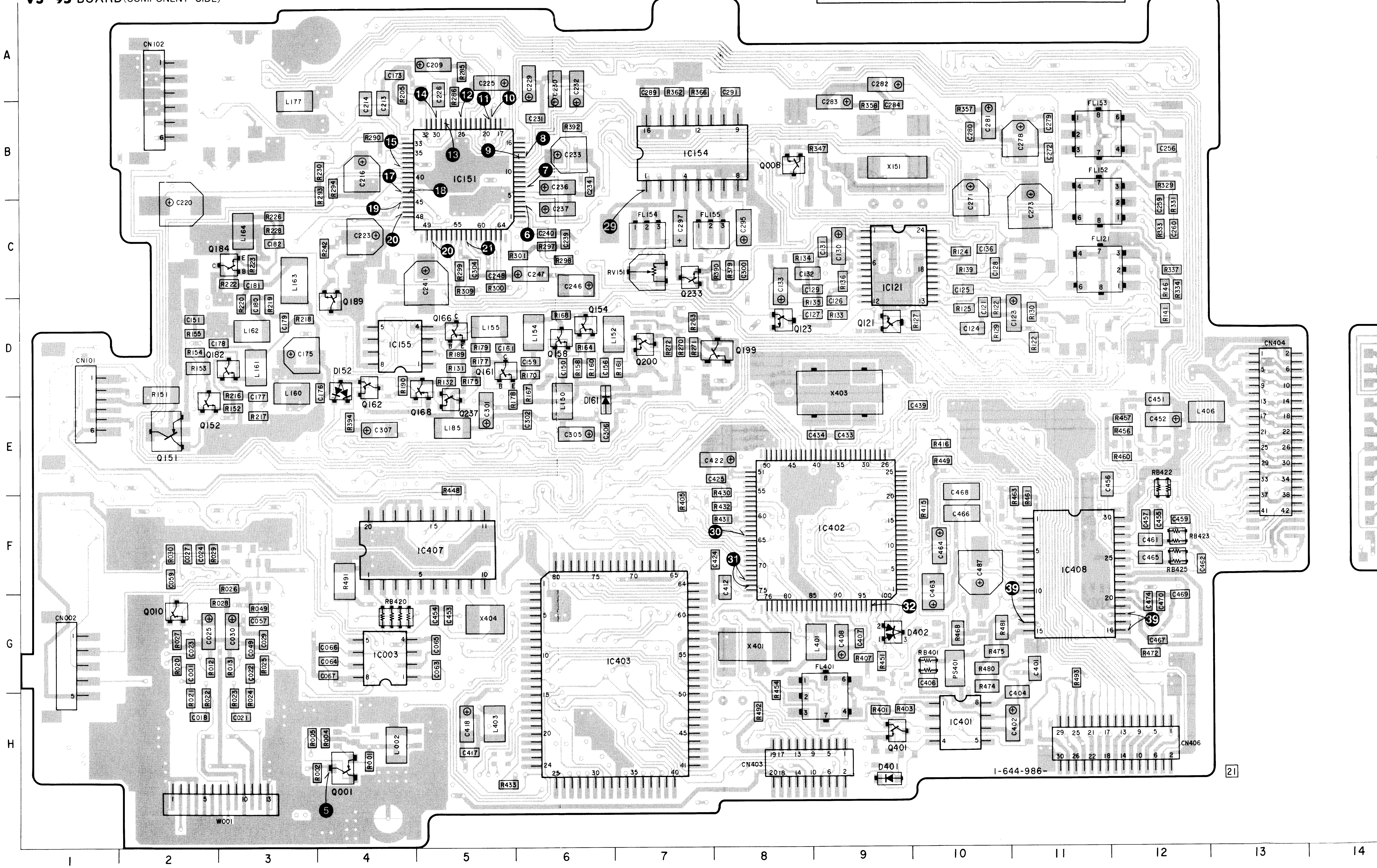
— Ref. No. VS-95 BOARD: 4000 series —

- **For printed wiring boards.**
- VS-95 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

| | |
|---|---|
| Pattern face side: (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component side) | Parts on the parts face side seen from the parts face are indicated. |

**VS-95** BOARD (COMPONENT SIDE)


A
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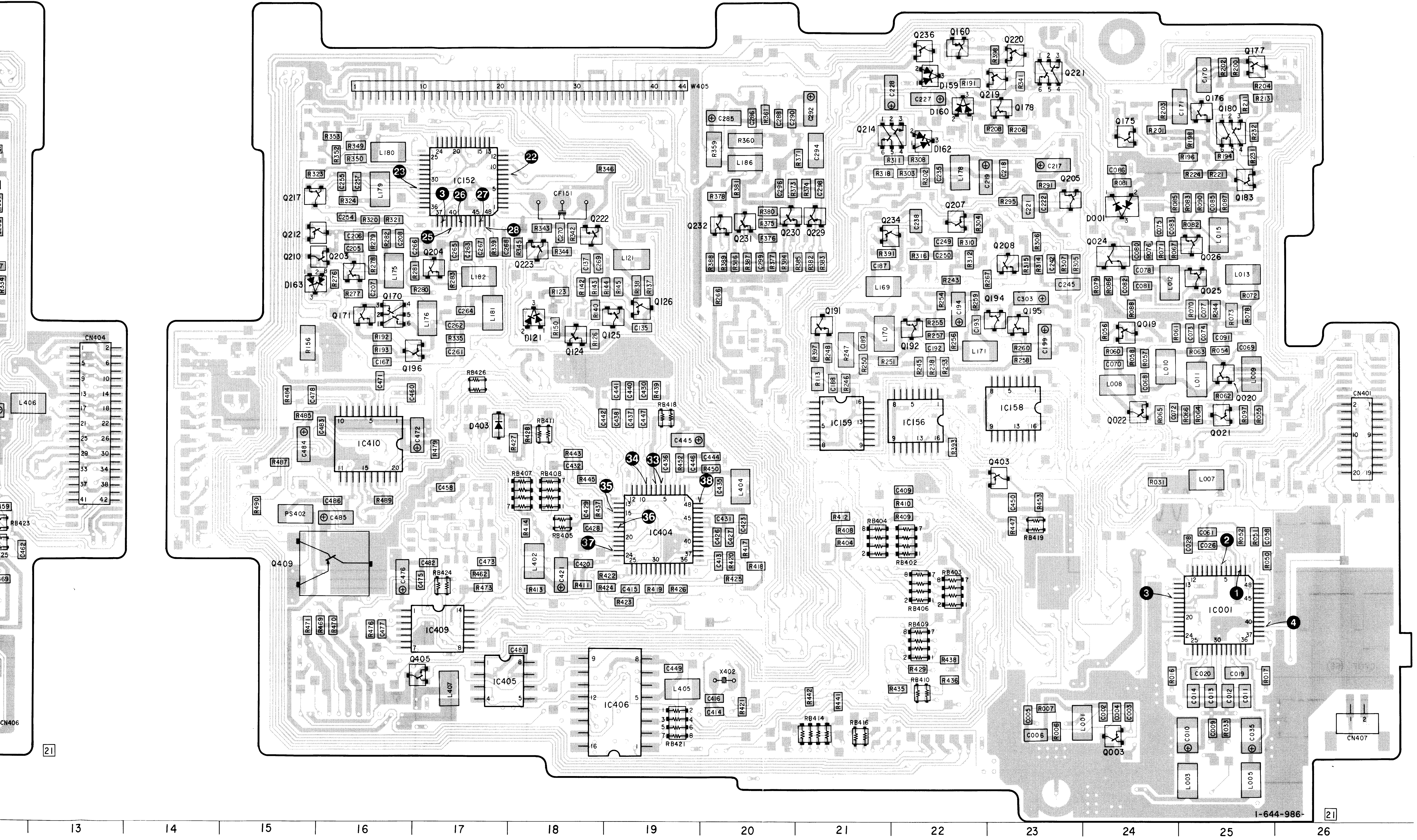
13
14
CN102
CN101
CN002
CN404
CN403
CN406
W001
IC151
IC154
IC155
IC121
IC402
IC403
IC407
IC408
IC003
IC401
X151
X403
X404
X401
FL153
FL152
FL121
FL154
FL155
FL401
RV151
RB420
RB422
RB423
RB425
RB401
Q184
Q189
Q182
Q151
Q152
Q010
Q001
Q166
Q161
Q162
Q168
Q237
Q154
Q158
Q200
Q199
Q233
Q008
Q123
Q121
Q401
D152
D161
D402
D401
L177
L164
L163
L162
L161
L160
L155
L154
L152
L150
L185
L002
L403
L401
L406
PS401
1-644-986-
21
09

VIDEO VIDEO

**VS-95** BOARD(COMPONENT SIDE)


W405
IC152
IC410
IC409
IC405
IC406
IC404
IC159
IC156
IC158
IC001
CN404
CN401
CN406
CN407
PS402
Q409
X402
CF151
L406
D403
RB423
1-644-986-
21
13
14
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26

( DIODE )

| | | |
|---|---|---|
| D001 | 8-719-800-76 | DIODE 1SS123 |
| D121 | 8-719-027-50 | DIODE MA142WK |
| D152 | 8-719-027-48 | DIODE MA142WA |
| D159 | 8-719-027-50 | DIODE MA142WK |
| D160 | 8-719-027-50 | DIODE MA142WK |
| D161 | 8-719-404-46 | DIODE MA110 |
| D162 | 8-719-027-50 | DIODE MA142WK |
| D163 | 8-719-027-50 | DIODE MA142WK |
| D401 | 8-719-421-27 | DIODE MA728 |
| D402 | 8-719-027-50 | DIODE MA142WK |
| D403 | 8-719-404-46 | DIODE MA110 |

( IC )

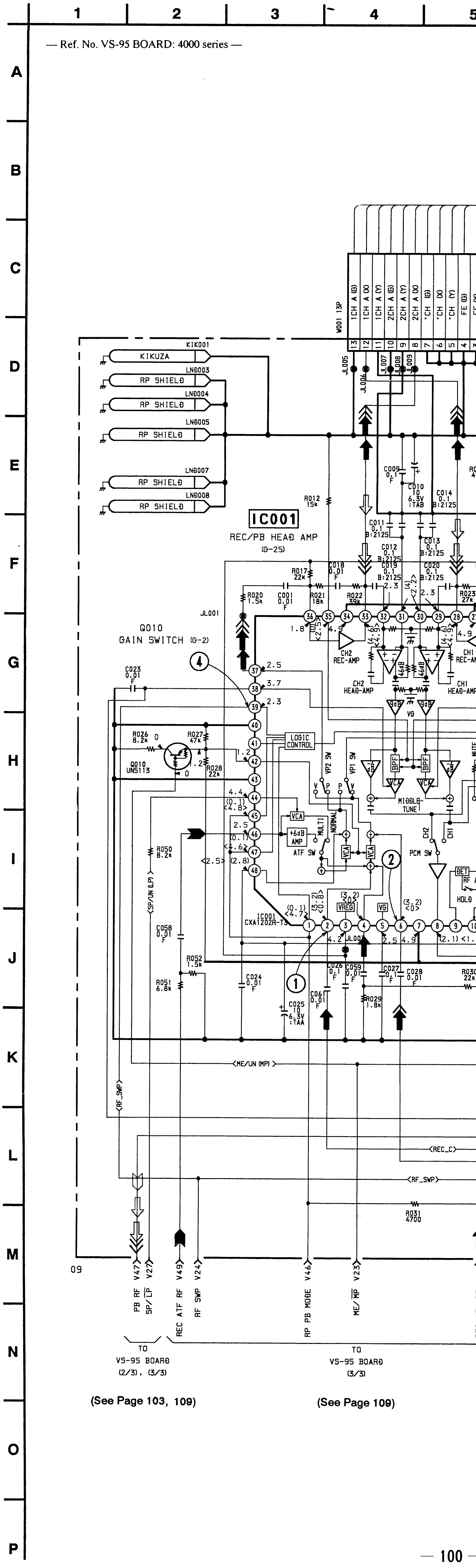
| | | |
|---|---|---|
| IC001 | 8-752-033-38 | IC CXA1202R |
| IC003 | 8-752-053-21 | IC CXA1211M |
| IC121 | 8-759-605-61 | IC CXA1203N |
| IC151 | 8-752-065-54 | IC CXA1207AR |
| IC152 | 8-752-065-56 | IC CXA1208R |
| IC154 | 8-752-333-24 | IC CXL1506M |
| IC155 | 8-752-053-21 | IC CXA1211M |
| IC156 | 8-759-055-82 | IC M62353GP |
| IC158 | 8-759-055-82 | IC M62353GP |
| IC159 | 8-759-636-33 | IC CXA1452N |
| IC401 | 8-759-056-84 | IC S-8420AF |
| IC402 | 8-752-838-20 | IC CXP80624-428R |
| IC403 | 8-759-096-79 | IC uPD75316GF-318-3B9 |
| IC404 | 8-759-059-42 | IC CXA1481AR |
| IC405 | 8-759-044-78 | IC BR9011BF-RE2 |
| IC406 | 8-759-081-96 | IC uPD6456GS-620 |
| IC407 | 8-759-145-63 | IC uPD7564G-540 |
| IC408 | 8-759-057-60 | IC MCD004BM |
| IC409 | 8-759-999-02 | IC TL1596CDB |
| IC410 | 8-759-062-02 | IC MPC1720VM |

( TRANSISTOR )

| | | |
|---|---|---|
| Q001 | 8-729-216-22 | TRANSISTOR 2SA1162 |
| Q003 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q008 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q010 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q019 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 |
| Q020 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 |
| Q021 | 8-729-905-23 | TRANSISTOR 2SA1576-R |
| Q022 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q024 | 8-729-102-07 | TRANSISTOR 2SC2223-F13 |
| Q025 | 8-729-014-16 | TRANSISTOR RN2302 |
| Q026 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q121 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q123 | 8-729-402-42 | TRANSISTOR UN5213 |
| Q124 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q125 | 8-729-117-73 | TRANSISTOR 2SC4178-F14 |
| Q126 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q151 | 8-729-101-07 | TRANSISTOR 2SB798-DL |
| Q152 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q154 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q158 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q160 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q161 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q162 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q166 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q168 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q170 | 8-729-420-20 | TRANSISTOR XN4312 |
| Q171 | 8-729-117-73 | TRANSISTOR 2SC4178-F14 |
| Q175 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q176 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q177 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q178 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q180 | 8-729-422-54 | TRANSISTOR XN4215 |
| Q182 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q183 | 8-729-420-53 | TRANSISTOR UN5115 |
| Q184 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q189 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q191 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q192 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q194 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q195 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q196 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q199 | 8-729-807-87 | TRANSISTOR 2SB1295-UL6 |
| Q200 | 8-729-013-88 | TRANSISTOR RN1302 |
| Q203 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q204 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q205 | 8-729-402-42 | TRANSISTOR UN5213 |
| Q207 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q208 | 8-729-013-88 | TRANSISTOR RN1302 |
| Q210 | 8-729-402-42 | TRANSISTOR UN5213 |
| Q212 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q214 | 8-729-420-12 | TRANSISTOR XN4213 |
| Q217 | 8-729-402-42 | TRANSISTOR UN5213 |
| Q219 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q220 | 8-729-402-42 | TRANSISTOR UN5213 |
| Q221 | 8-729-420-12 | TRANSISTOR XN4213 |
| Q222 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q223 | 8-729-402-42 | TRANSISTOR UN5213 |
| Q229 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q230 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q231 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q232 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q233 | 8-729-402-32 | TRANSISTOR 2SD1819A-R |
| Q234 | 8-729-402-55 | TRANSISTOR 2SB1218A-R |
| Q236 | 8-729-420-56 | TRANSISTOR UN511E |
| Q237 | 8-729-425-50 | TRANSISTOR 2SB1462Q |
| Q401 | 8-729-402-48 | TRANSISTOR UN521E |
| Q403 | 8-729-403-35 | TRANSISTOR UN5113 |
| Q405 | 8-729-907-00 | TRANSISTOR DTC114EU |
| Q409 | 8-729-017-67 | TRANSISTOR 2SB1574 |

## VS-95 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

• Refer to p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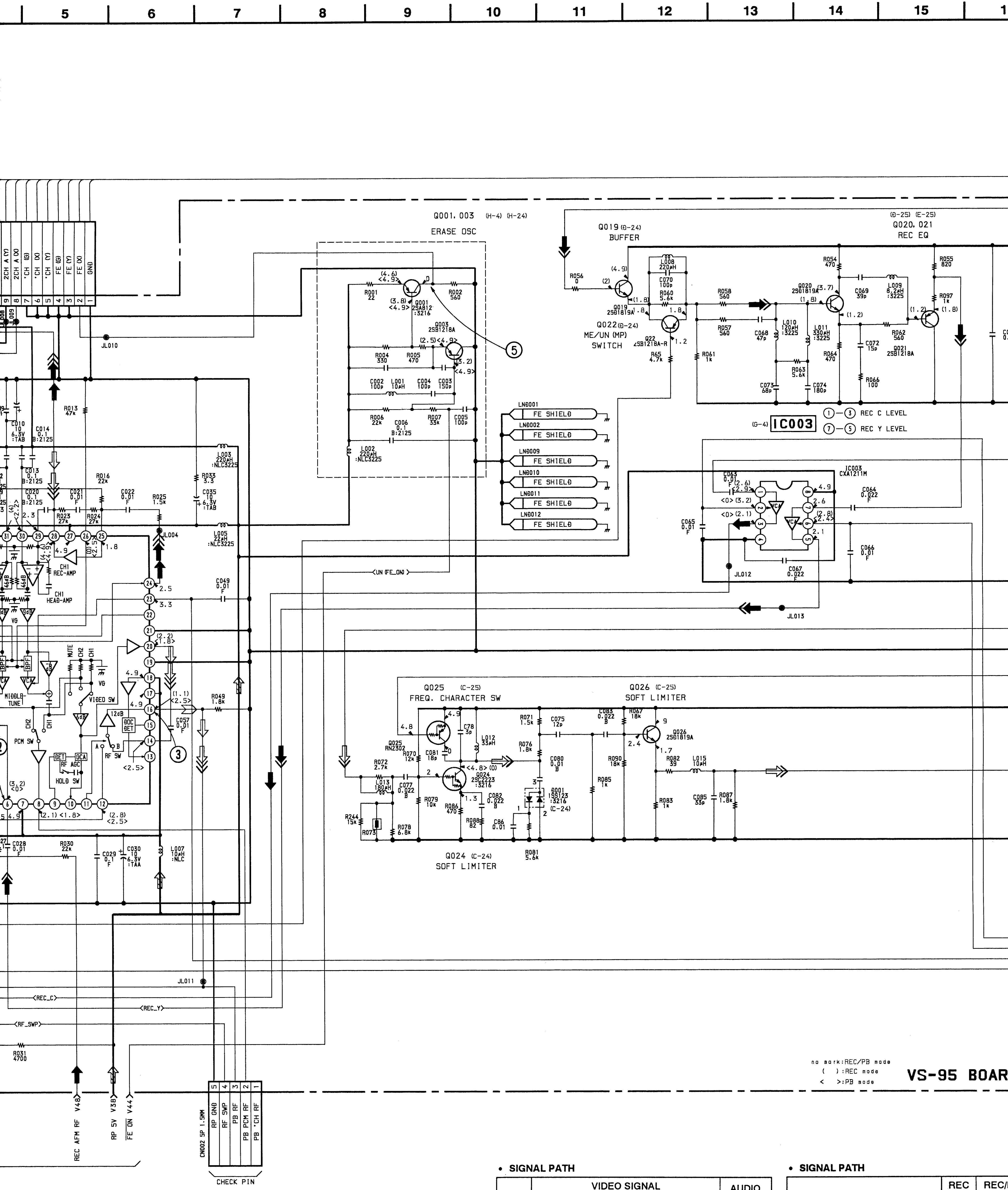
P
— Ref. No. VS-95 BOARD: 4000 series —
KIK001
KIKUZA
LN0003
RP SHIELD
LN0004
LN0005
LN0007
LN0008
W001 13P
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (X)
2CH A (Y)
JL005
JL006
JL007
JL008
JL009
IC001
REC/PB HEAD AMP
(G-25)
R012 15k
C009 0.1 F
C010 10 6.3V :TAB
C014 0.1 B:2125
C011 0.1 B:2125
C013 0.1 B:2125
C012 0.1 B:2125
C019 0.1 B:2125
C020 0.1 B:2125
R017 22k
C018 0.01 F
R020 1.5k
C001 0.01 F
R021 18k
R022 39k
R023 27k
JL001
Q010
GAIN SWITCH (G-2)
C023 0.01
CH2 REC-AMP
CH2 HEAD-AMP
CH1 REC-AMP
CH1 HEAD-AMP
VG
R026 8.2k
R027 47k
R028 22k
Q010 UN5113
LOGIC CONTROL
VP2 SW
VP1 SW
BPF
VCA
MIDDLE-TUNE
+6dB AMP
MULTI
NORMAL
ATF SW
PCM SW
R050 8.2k
<SP/UN (LP)>
C058 0.01 F
VREG
VG
IC001 CXA1202R-T
HOLD
R052 1.5k
R051 6.8k
C024 0.01 F
C025 10 6.3V :TAA
C026 0.1 F
C059 0.01 F
C061 0.01 F
R029 1.8k
C027 0.1 F
C028 0.01 F
R030 22k
<ME/UN (MP)>
<RF_SWP>
<REC_C>
R031 4700
09
PB RF V47
SP/LP V27
REC ATF RF V49
RF SWP V24
RP PB MODE V46
ME/MP V23
TO VS-95 BOARD (2/3), (3/3)
(See Page 103, 109)
TO VS-95 BOARD (3/3)
(See Page 109)

- Refer to page 95 for Printed Wiring Board.



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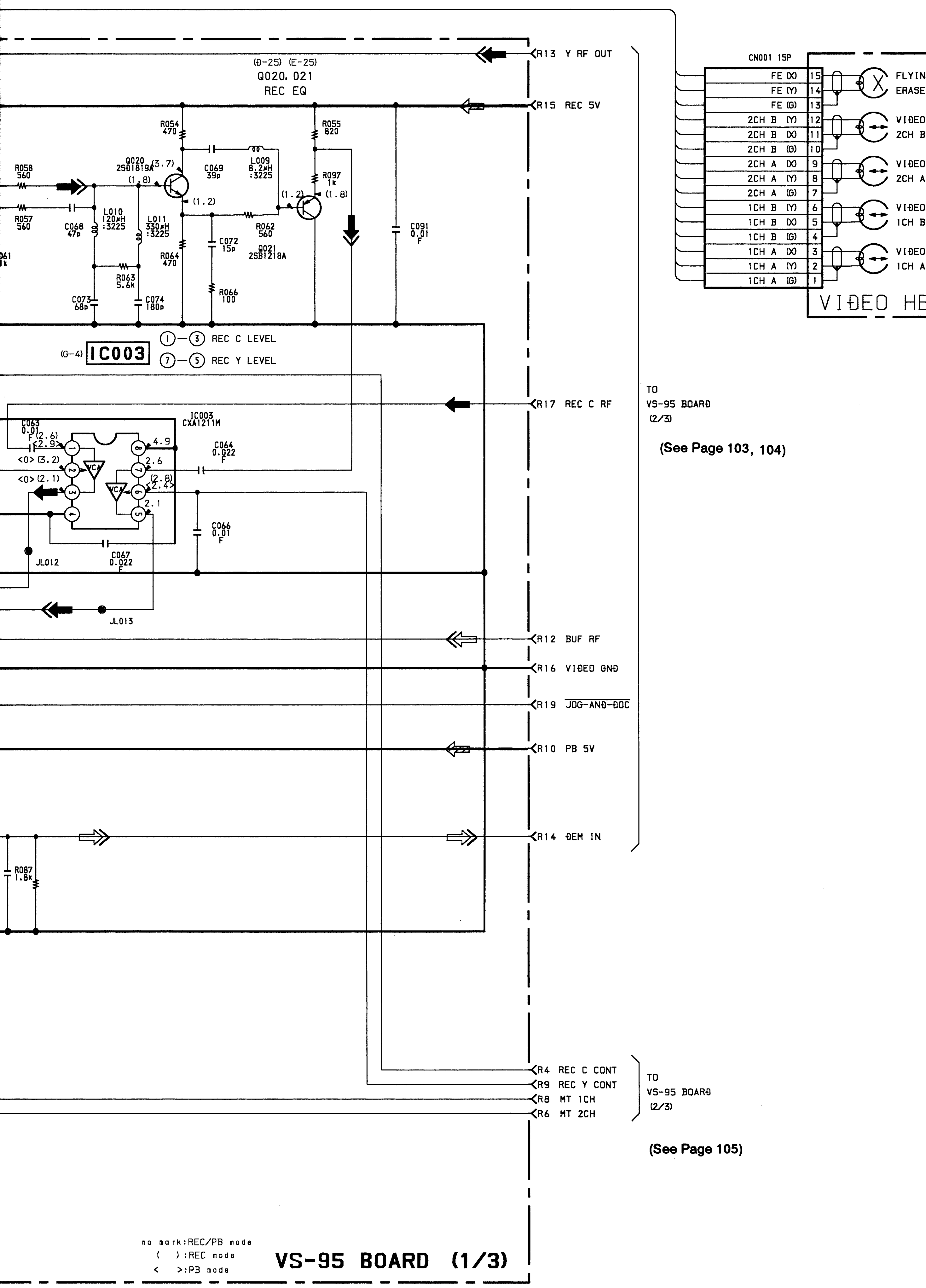
Q001, 003 (H-4) (H-24)
ERASE OSC
Q001 2SA812 :3216
Q003 2SB1218A
Q019 (G-24)
BUFFER
Q019 2SB1819A
Q022 (G-24)
ME/UN (MP) SWITCH
Q22 2SB1218A-R
Q020, 021
REC EQ
Q020 2SB1819A
Q021 2SB1218A
(G-4) IC003
①-③ REC C LEVEL
⑦-⑤ REC Y LEVEL
IC003 CXA1211M
FE SHIELD
LN0001
LN0002
LN0009
LN0010
LN0011
LN0012
JL010
JL011
JL012
JL013
<UN (FE_ON)>
Q025 (C-25)
FREQ. CHARACTER SW
Q025 RN2302
Q024 (C-24)
SOFT LIMITER
Q024 2SC2223 :3216
Q026 (C-25)
SOFT LIMITER
Q026 2SB1819A
D001 1SS123 :3216 (C-24)
CH1 REC-AMP
CH1 HEAD-AMP
MIDDLE-TUNE
VIDEO SW
PCM SW
RF SW
RF AGC
HOLD SW
DOC DET
MUTE
2CH A (Y)
2CH A (X)
*CH (G)
*CH (X)
*CH (Y)
FE (G)
FE (Y)
FE (X)
GND
<REC_C>
<REC_Y>
<RF_SWP>
REC AFM RF V48
RP SV V38
FE ON V44
CN002 5P 1.5MM
RP GND
RF SWP
PB RF
PB PCM RF
PB *CH RF
CHECK PIN
no mark:REC/PB mode
( ) :REC mode
< >:PB mode
VS-95 BOAR

**• SIGNAL PATH**

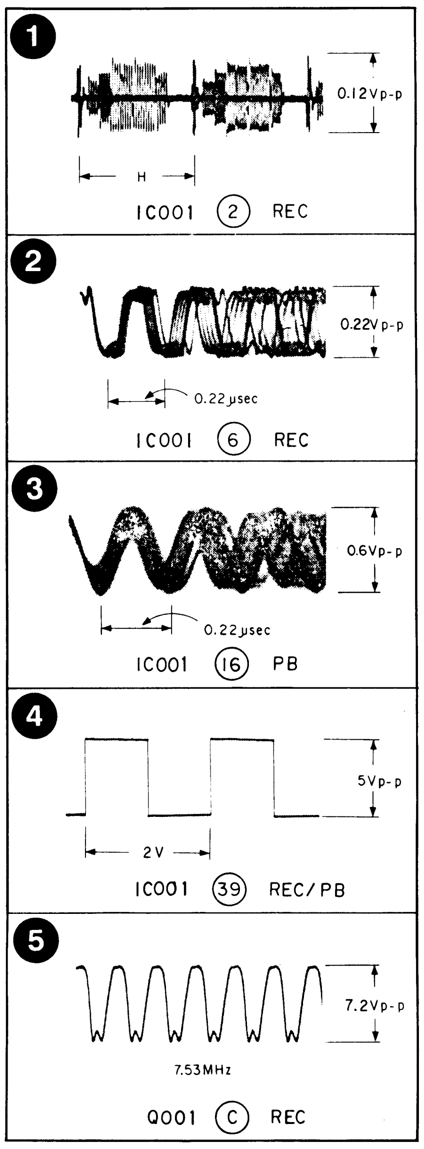
| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡ | ➡ | ➡ |
| PB | | ⇨ | ⇨ | ⇨ |

**• SIGNAL PATH**

| | REC | REC/ |
|---|---|---|
| Drum speed servo | | |
| Drum phase servo | | |
| Drum servo (speed and phase) | | |
| Capstan speed servo | | |
| Capstan phase servo | | |
| Capstan servo (speed and phase) | | |
| Ref. signal | ➤ | |


(D-25) (E-25)
Q020, 021
REC EQ
R054 470
R055 820
R058 560
R057 560
Q020 2SD1819A
C069 39p
L009 8.2μH :3225
R097 1k
L010 120μH :3225
L011 330μH :3225
C068 47p
R062 560
C072 15p
Q021 2SB1218A
C091 0.01 F
R064 470
R063 5.6k
R066 100
C073 68p
C074 180p
(G-4) IC003
①—③ REC C LEVEL
⑦—⑤ REC Y LEVEL
IC003 CXA1211M
C063 0.01 F
C064 0.022 F
C066 0.01 F
C067 0.022 F
JL012
JL013
R087 1.8k
R13 Y RF OUT
R15 REC 5V
R17 REC C RF
R12 BUF RF
R16 VIDEO GND
R19 JOG-AND-DOC
R10 PB 5V
R14 DEM IN
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
TO VS-95 BOARD (2/3)
(See Page 103, 104)
TO VS-95 BOARD (2/3)
(See Page 105)
CN001 15P
FE (X) 15
FE (Y) 14
FE (G) 13
2CH B (Y) 12
2CH B (X) 11
2CH B (G) 10
2CH A (X) 9
2CH A (Y) 8
2CH A (G) 7
1CH B (Y) 6
1CH B (X) 5
1CH B (G) 4
1CH A (X) 3
1CH A (Y) 2
1CH A (G) 1
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
VIDEO HEAD
no mark:REC/PB mode
( ):REC mode
< >:PB mode
VS-95 BOARD (1/3)

**VS-95** BOARD (1/3)



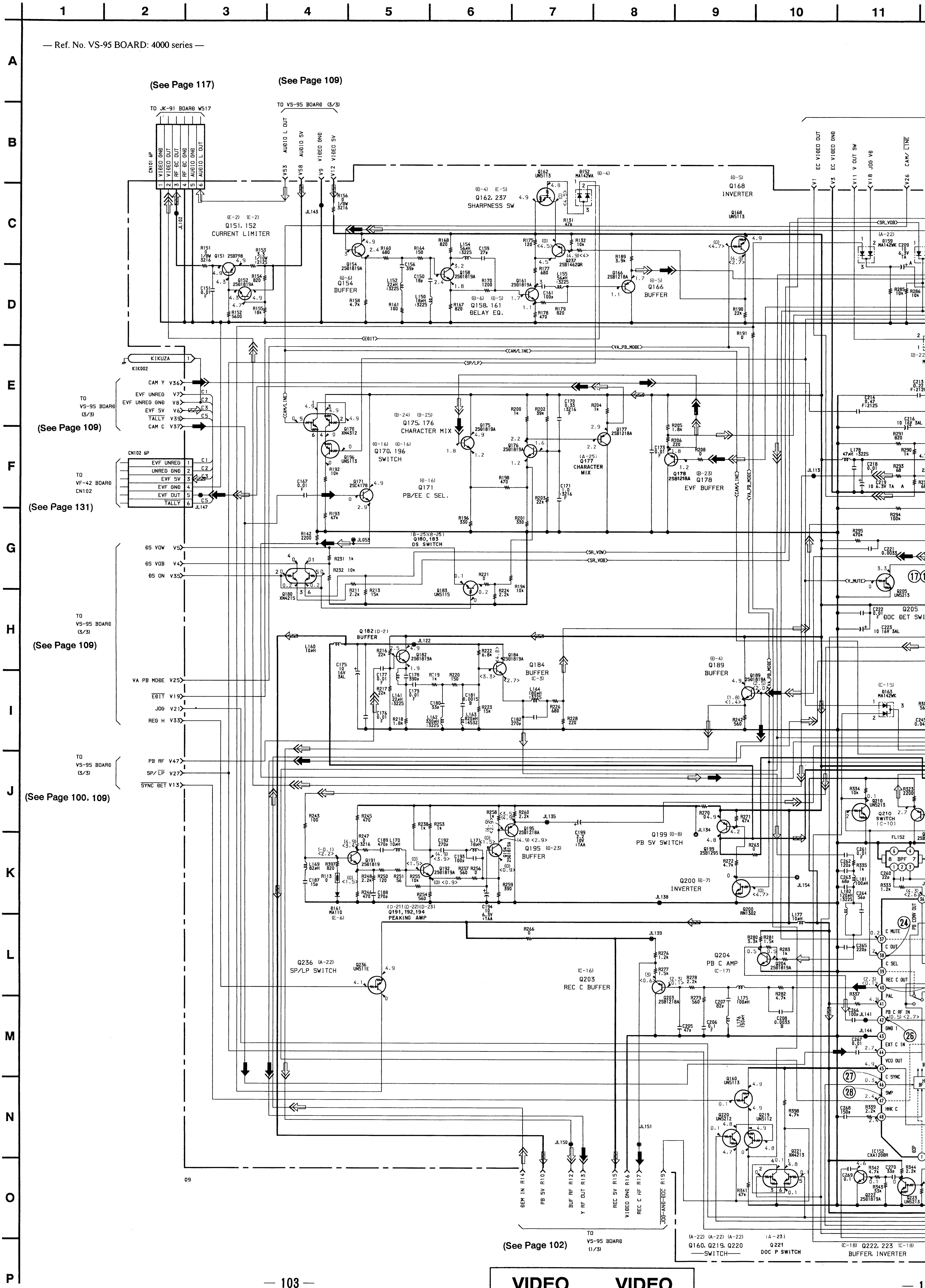
| AUDIO SIGNAL |
|---|
| ➡ |
| ⇨ |

- **SIGNAL PATH**

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | | |
| Drum phase servo | | | |
| Drum servo (speed and phase) | | | |
| Capstan speed servo | | | |
| Capstan phase servo | | | |
| Capstan servo (speed and phase) | | | |
| Ref. signal | ➡ | | ⇨ |

## VS-95 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 95 for Printed Wiring Board.



— Ref. No. VS-95 BOARD: 4000 series —

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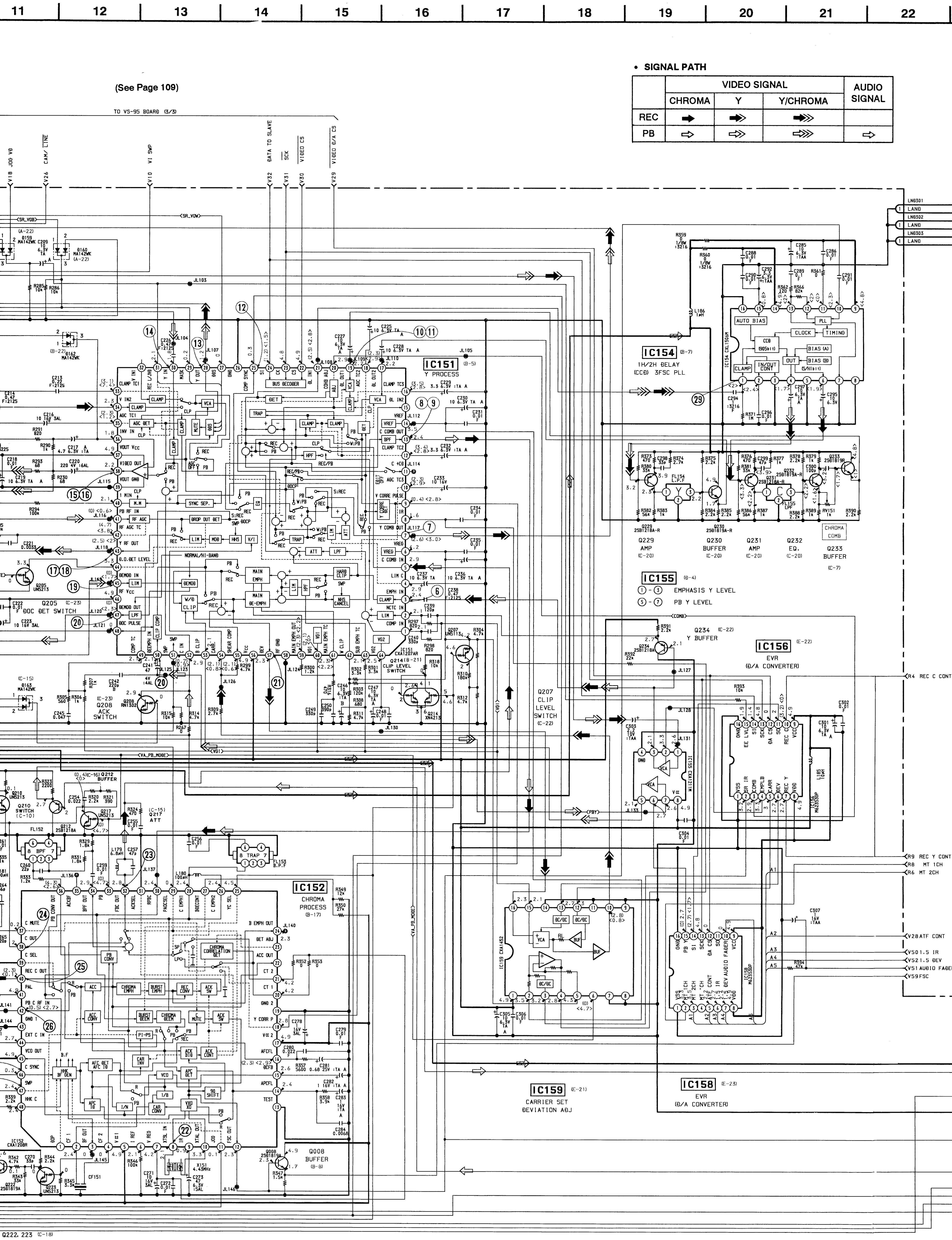
J
K
L
M
N
O
P
(See Page 117)
(See Page 109)
TO JK-91 BOARD W517
TO VS-95 BOARD (3/3)
CN101 6P
VIDEO GND
VIDEO OUT
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
AUDIO L OUT
AUDIO 5V
VIDEO GND
VIDEO 5V
Q151, 152
CURRENT LIMITER
Q154
BUFFER
Q162, 237
SHARPNESS SW
Q158, 161
DELAY EQ.
Q168
INVERTER
Q166
BUFFER
EC VIDEO OUT
EC VIDEO GND
V OUT 5W
JOG V0
CAM/LINE
KIKUZA
KIK002
CAM Y V36
EVF UNREG V7
EVF UNREG GND V8
EVF 5V V6
TALLY V35
CAM C V37
TO VS-95 BOARD (3/3)
(See Page 109)
CN102 6P
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
TO VF-42 BOARD CN102
(See Page 131)
Q175, 176
CHARACTER MIX
Q170, 196
SWITCH
Q171
PB/EE C SEL.
Q177
CHARACTER MIX
Q178
EVF BUFFER
Q180, 183
DS SWITCH
DS VDW V5
DS VDB V4
DS ON V35
TO VS-95 BOARD (3/3)
(See Page 109)
Q182
BUFFER
Q184
BUFFER
Q189
BUFFER
VA PB MODE V25
EDIT V19
JOG V21
REG H V33
TO VS-95 BOARD (3/3)
PB RF V47
SP/LP V27
SYNC DET V13
(See Page 100, 109)
Q205
DOC DET SW
Q210
SWITCH
Q191, 192, 194
PEAKING AMP
Q195
BUFFER
Q199
PB 5V SWITCH
Q200
INVERTER
Q236
SP/LP SWITCH
Q203
REC C BUFFER
Q204
PB C AMP
IC152
CXA1208R
DEM IN R14
PB 5V R10
BUF RF R12
Y RF OUT R13
REC 5V R15
VIDEO GND R16
REC C RF R17
JOG-AND-DOC R19
TO VS-95 BOARD (1/3)
(See Page 102)
Q160, Q219, Q220
SWITCH
Q221
DOC P SWITCH
Q222, 223
BUFFER, INVERTER

(See Page 109)

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡» | ➡»» | |
| PB | ⇨ | ⇨» | ⇨»» | ⇨ |



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19
20
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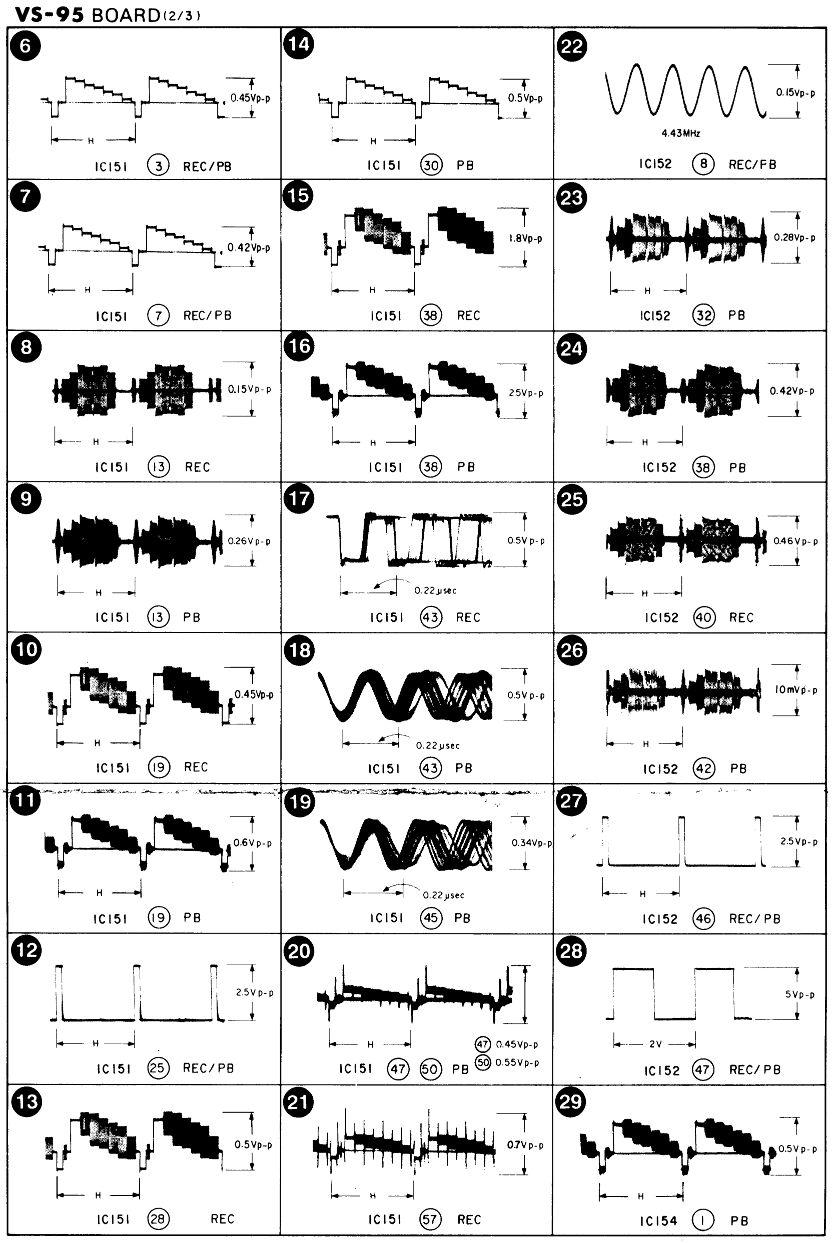
22
TO VS-95 BOARD (3/3)
V18 JOG VD
V26 CAM/ LINE
V10 V1 SWP
V32 DATA TO SLAVE
V31 SCK
V30 VIDEO CS
V29 VIDEO D/A CS
IC151 Y PROCESS (B-5)
IC151 CXA1207AR
IC152 CHROMA PROCESS (B-17)
IC152 CXA1208R
IC154 1H/2H DELAY (CCD) 3FSC PLL (B-7)
IC154 CXL1506M
IC155 EMPHASIS Y LEVEL (D-4)
①-③ EMPHASIS Y LEVEL
⑤-⑦ PB Y LEVEL
IC155 CXA1211M
IC156 EVR (D/A CONVERTER) (E-22)
IC156 M62353GP
IC158 EVR (D/A CONVERTER) (E-23)
IC158 M62353GP
IC159 CARRIER SET DEVIATION ADJ (E-21)
IC159 CXA1452
Q205 DOC DET SWITCH (C-23)
Q207 CLIP LEVEL SWITCH (C-22)
Q208 ACK SWITCH (C-23)
Q210 SWITCH (C-10)
Q212 BUFFER (C-16)
Q217 ATT (C-15)
Q214 CLIP LEVEL SWITCH (B-21)
Q229 AMP (C-20)
Q230 BUFFER (C-20)
Q231 AMP (C-20)
Q232 EQ. (C-20)
Q233 BUFFER (C-7)
CHROMA COMB
Q234 Y BUFFER (C-22)
Q008 BUFFER (B-8)
Q222, 223 BUFFER INVERTER (C-18)
X151 4.43MHz
FL152 BPF
FL153 B.P.F
FL154 L.P.F
FL155 LPF
LN0301 LAND
LN0302 LAND
LN0303 LAND
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
V28 ATF CONT
V50 1.5 IR
V52 1.5 DEV
V51 AUDIO FADER
V59 FSC

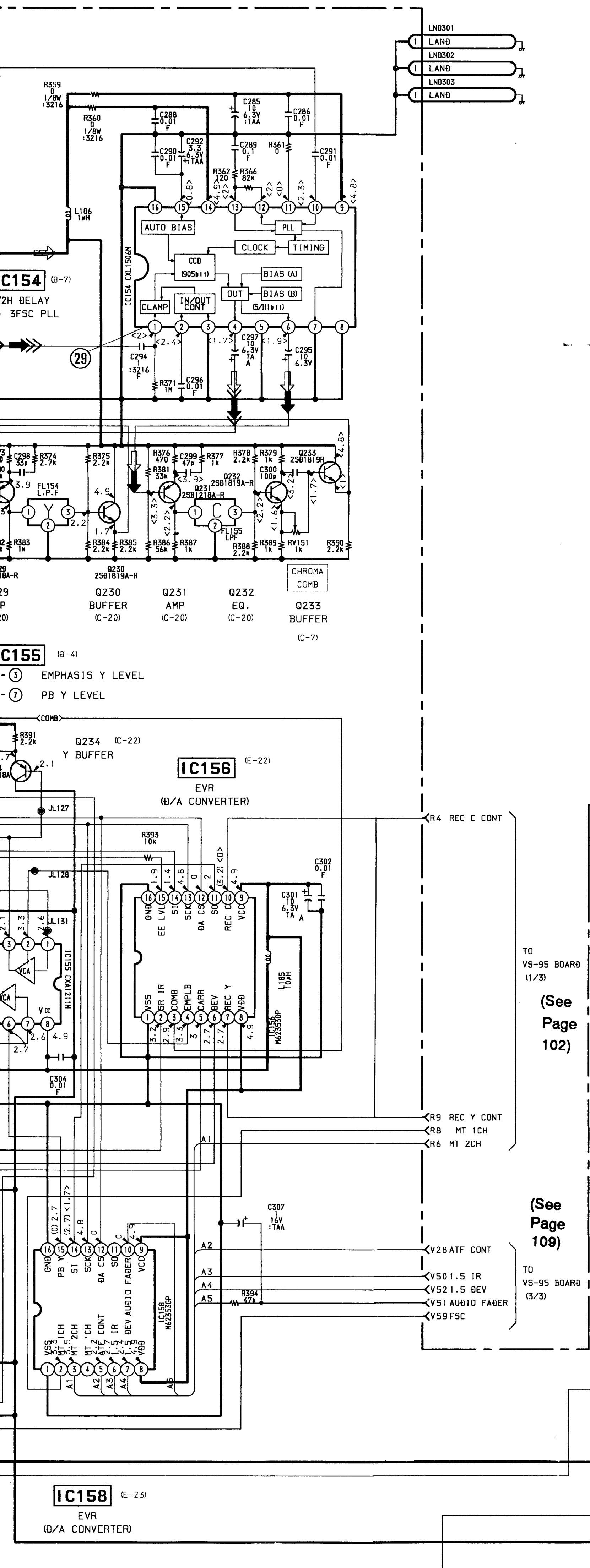
VIDE

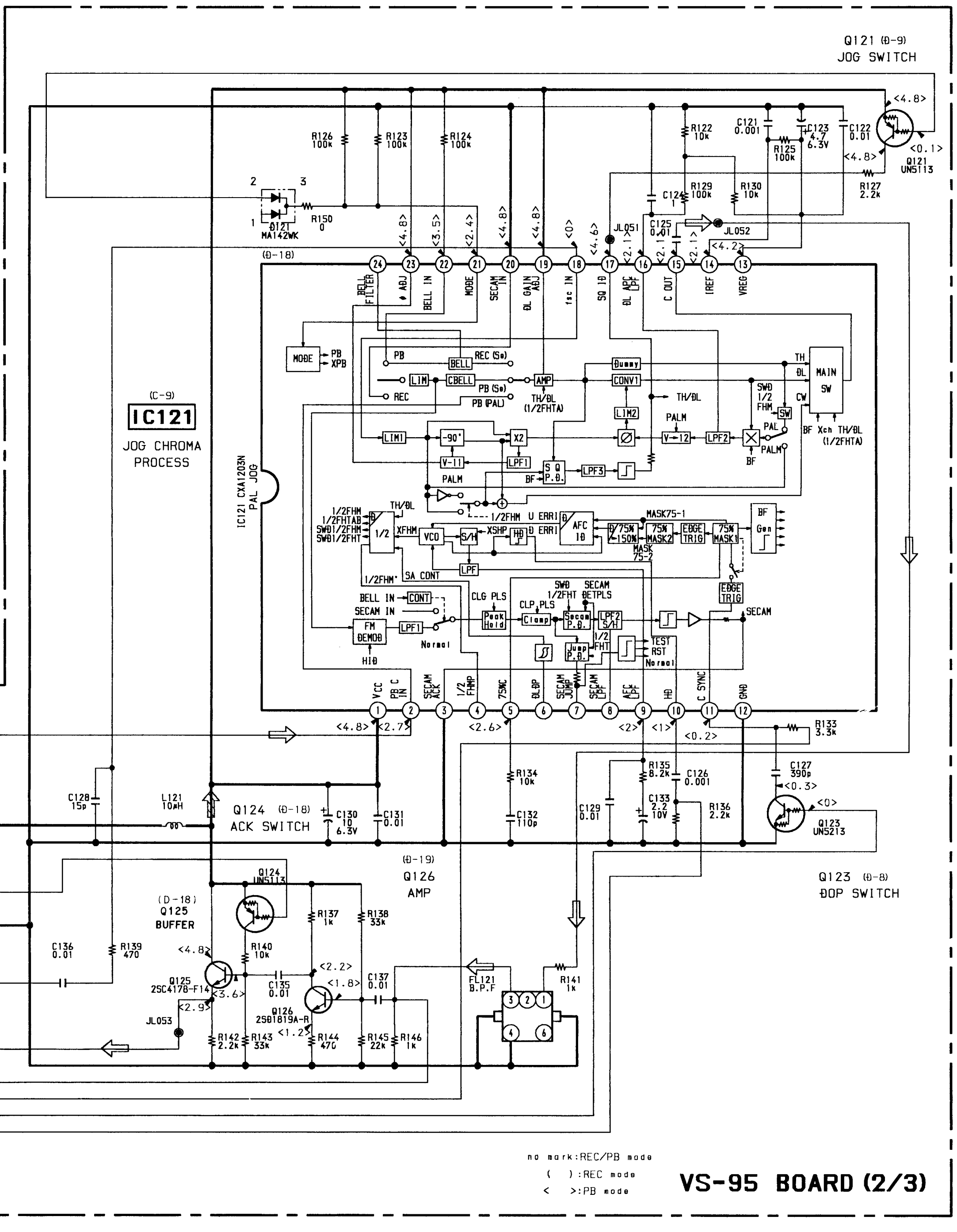
IGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| EC | ➡ | ➡≫ | ➡≫≫ | |
| B | ⇨ | ⇨≫ | ⇨≫≫ | ⇨ |

**VS-95** BOARD (2/3)

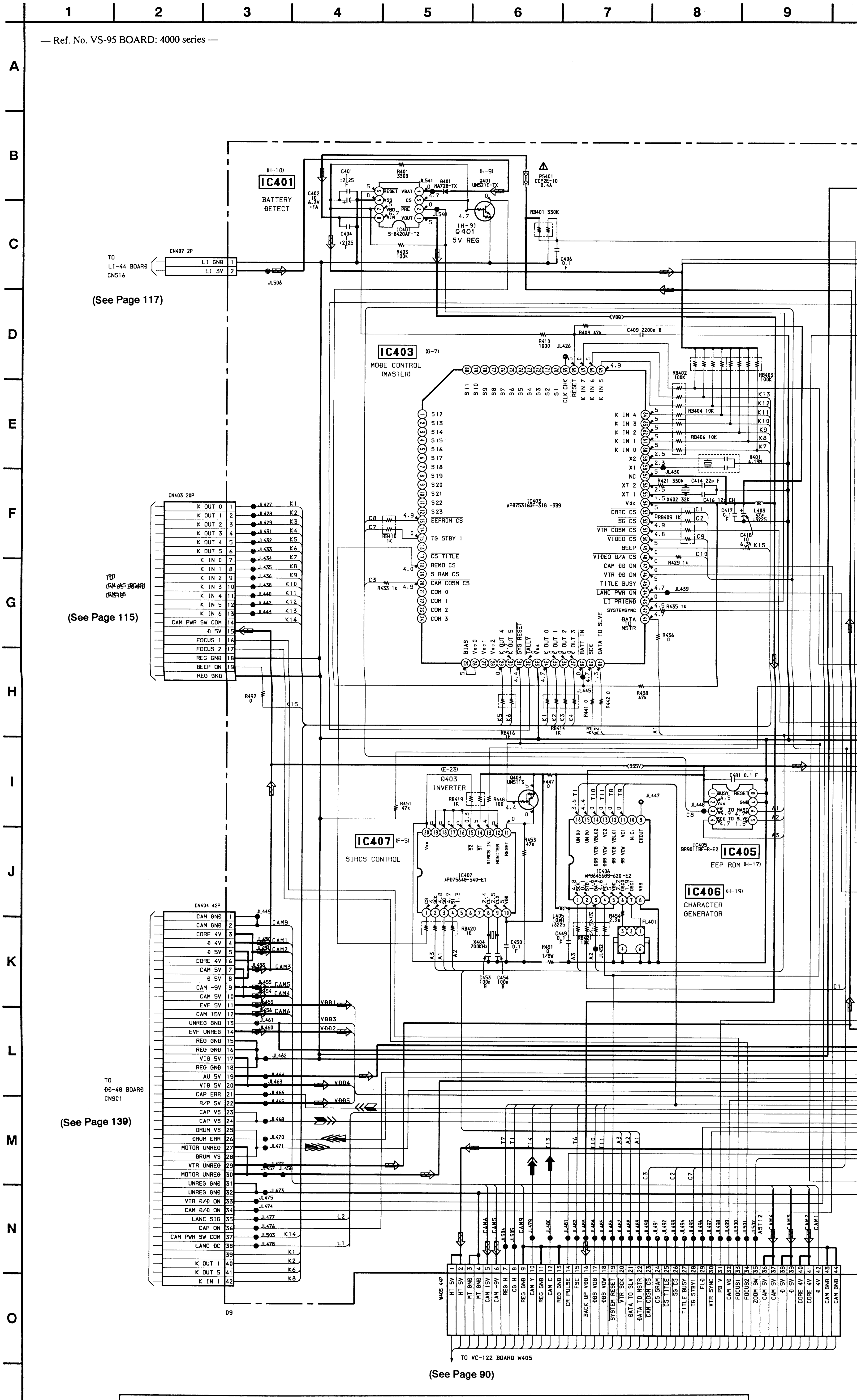



LN8301 LAND
LN8302 LAND
LN8303 LAND
R359 0 1/8W :3216
R360 0 1/8W :3216
C288 0.01 F
C285 10 6.3V :TAA
C286 0.01 F
C290 0.01 F
C292 3.3 6.3V :TAA
C289 0.1 F
R361 0
C291 0.01 F
R362 120
R366 82k
L186 1mH
AUTO BIAS
PLL
CLOCK
TIMING
CCD (905bit)
BIAS (A)
BIAS (B)
CLAMP
IN/OUT CONT
OUT
(S/H1bit)
IC154 CXL1506M
IC154 (B-7)
2H DELAY
3FSC PLL
C294 :3216 F
R371 1M
C296 0.01 F
C297 10 6.3V TA A
C295 10 6.3V
㉙
C298 33p
R374 2.7k
FL154 L.P.F
R375 2.2k
R376 470
C299 47p
R377 1k
R378 2.2k
R379 1k
Q233 2SB1819R
R381 33k
Q232 2SB1819A-R
Q231 2SB1218A-R
C300 100p
FL155 LPF
R383 1k
R384 2.2k
R385 2.2k
R386 56k
R387 1k
R388 2.2k
R389 1k
RV151 1k
R390 2.2k
Q230 2SB1819A-R
Q230 BUFFER (C-20)
Q231 AMP (C-20)
Q232 EQ. (C-20)
CHROMA COMB
Q233 BUFFER (C-7)
IC155 (B-4)
③ EMPHASIS Y LEVEL
⑦ PB Y LEVEL
(COMB)
R391 2.2k
Q234 (C-22) Y BUFFER
JL127
IC156 (E-22)
EVR (D/A CONVERTER)
R393 10k
JL128
C302 0.01
C301 10 6.3V TA A
GND EE LVL SCK DA CS SO REC C VCC
VSS SR IR COMB EMPLB CARR DEV REC Y VDD
L185 10uH
IC156 M62330P
JL131
IC155 CXA1211M
C304 0.01
VCA
Vα
C307 16V :TAA
R394 47k
A1 A2 A3 A4 A5
GND PB Y S1 SCK DA CS SO VCC
VSS MT 1CH MT 2CH REC Y IR DEV AUDIO FADER VDD
IC158 M62330P
IC158 (E-23)
EVR (D/A CONVERTER)
R4 REC C CONT
R9 REC Y CONT
R8 MT 1CH
R6 MT 2CH
V28 ATF CONT
V50 1.5 IR
V52 1.5 DEV
V51 AUDIO FADER
V59 FSC
TO VS-95 BOARD (1/3) (See Page 102)
(See Page 109) TO VS-95 BOARD (3/3)


Q121 (D-9) JOG SWITCH
Q121 UN5113
R127 2.2k
R126 100k
R123 100k
R124 100k
R122 10k
C121 0.001
R125 100k
C123 4.7 6.3V
C122 0.01
R129 100k
R130 10k
C124
C125 0.01
JL051
JL052
D121 MA142WK
R150 0
(D-18)
BELL FILTER
BELL IN
MODE
SECAM ADJ
BL GAIN ADJ
fsc IN
SQ IO
BL APC
C OUT
IREF
VREG
MODE PB XPB
REC (Sα)
BELL
LIM
CBELL
PB (Sα)
PB (PAL)
AMP
TH/BL (1/2FHTA)
Buzzer
CONV1
LIM2
TH/BL
PALM
V-12
LPF2
SWB 1/2 FHM SW
MAIN SW
PAL
BF
BF Xch TH/BL (1/2FHTA)
LIM1
-90°
X2
LPF1
V-11
S&H P.B.
LPF3
1/2FHM 1/2FHTAB SWB1/2FHM SWB1/2FHT
TH/BL
1/2
XFHM
VCO
XSHP
U ERRI
AFC 18
MASK75-1
75N MASK2
EDGE TRIG
75N MASK1
BF Gen
SA CONT
LPF
1/2FHM
BELL IN SECAM IN
CONT
FM DEMOD
LPF1
Normal
HIO
CLG PLS
Peak Hold
Clamp
SWB SECAM 1/2FHT BETPLS
CLP PLS
Secam P.B.
LPF2
Jump FHT
TEST RST Normal
EDGE TRIG
SECAM
IC121 CXA1203N PAL JOG
(C-9) IC121 JOG CHROMA PROCESS
Vcc PB C IN SECAM ACK 1/2 FHMP 75NC BLDP SECAM SECAM ACK C SYNC GND
R133 3.3k
R134 10k
C132 110p
C129 0.01
R135 8.2k
C126 0.001
C133 2.2 10V
R136 2.2k
C127 390p
Q123 UN5213
Q123 (D-8) DOP SWITCH
C128 15p
L121 10uH
Q124 (D-18) ACK SWITCH
C130 10 6.3V
C131 0.01
(D-19) Q126 AMP
Q124 UN5113
R137 1k
R138 33k
(D-18) Q125 BUFFER
C136 0.01
R139 470
R140 10k
Q125 2SC4178-F14
C135 0.01
Q126 2SD1819A-R
C137 0.01
JL053
R142 2.2k
R143 33k
R144 470
R145 22k
R146 1k
FL121 B.P.F
R141 1k
no mark:REC/PB mode
( ):REC mode
< >:PB mode
VS-95 BOARD (2/3)

## VS-95 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

• Refer to page 95 for Printed Wiring Board.


1
2
3
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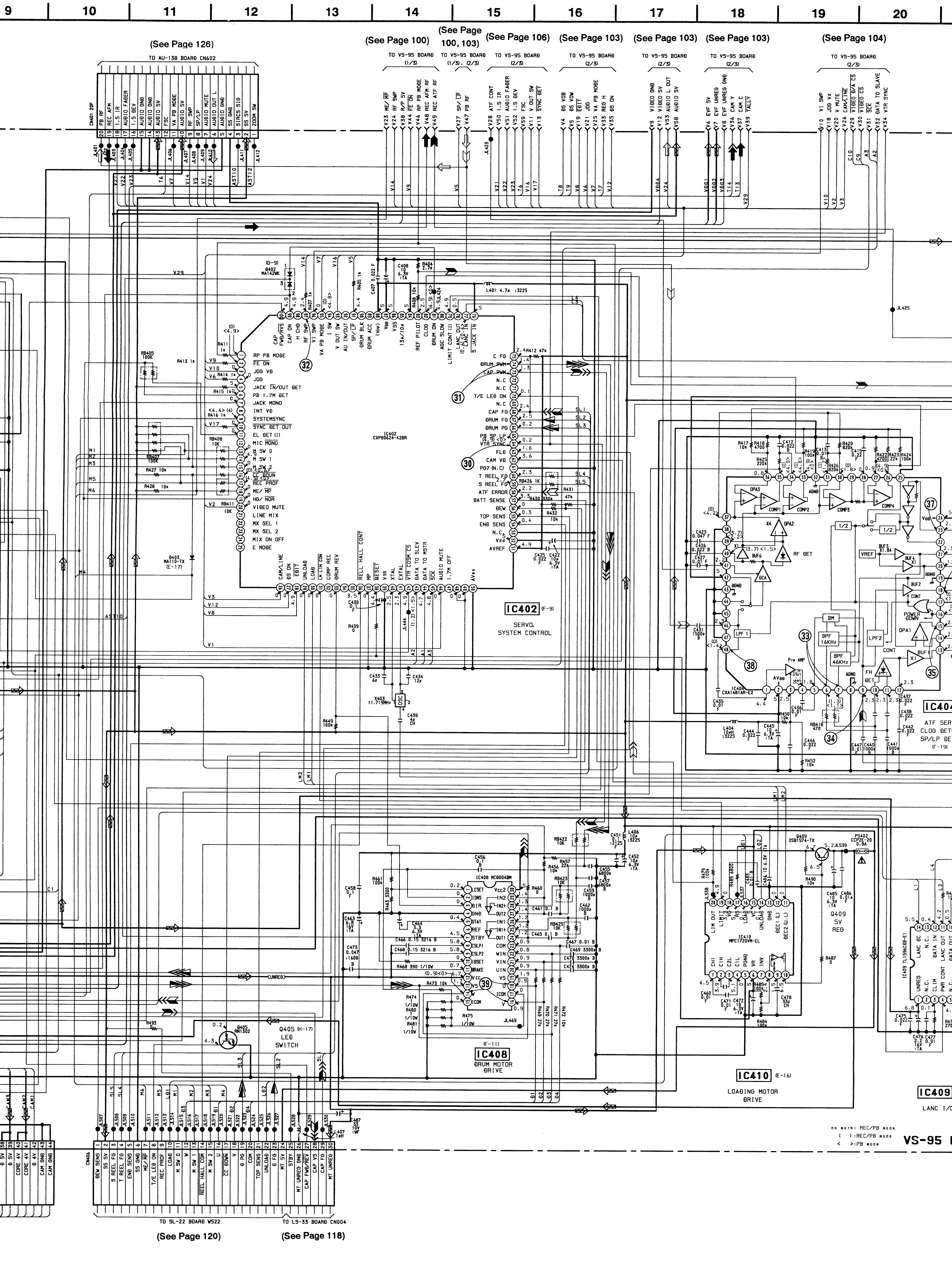
8
9
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
— Ref. No. VS-95 BOARD: 4000 series —
IC401
BATTERY DETECT
IC401 S-8420AF-T2
Q401 UN521E-TX
Q401 5V REG
D401 MA728-TX
PS401 CCP2E-10 0.4A
RB401 330K
CN407 2P
L1 GND
L1 3V
TO LI-44 BOARD CN516
(See Page 117)
IC403
MODE CONTROL (MASTER)
IC403 μPD75316GF-318-3B9
RB402 100K
RB403 100K
RB404 10K
RB406 10K
X401 4.19M
X402 32K
CN403 20P
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
D 5V
FOCUS 1
FOCUS 2
REG GND
BEEP ON
REG GND
TO CN-45 BOARD CN518
(See Page 115)
IC407
SIRCS CONTROL
IC407 μPD75P640-540-E1
Q403 INVERTER
Q403 UN5113
X404 700KHz
IC406
CHARACTER GENERATOR
IC406 μPD6456GS-620-E2
IC405
EEP ROM
IC405 BR9011BF-R-E2
CN404 42P
CAM GND
CAM GND
CORE 4V
D 4V
D 5V
CORE 4V
CAM 5V
D 5V
CAM -9V
CAM 5V
EVF 5V
CAM 15V
UNREG GND
EVF UNREG
REG GND
REG GND
VID 5V
REG GND
AU 5V
VID 5V
CAP ERR
R/P 5V
CAP VS
CAP VS
DRUM VS
DRUM ERR
MOTOR UNREG
DRUM VS
VTR UNREG
MOTOR UNREG
UNREG GND
UNREG GND
VTR D/D ON
CAM D/D ON
LANC SIG
CAP ON
CAM PWR SW COM
LANC DC
K OUT 1
K OUT 5
K IN 1
TO DD-48 BOARD CN901
(See Page 139)
W405 44P
TO VC-122 BOARD W405
(See Page 90)

SERVO SYSTEM CONTROL

SERVO SYSTEM CONTROL



9
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17
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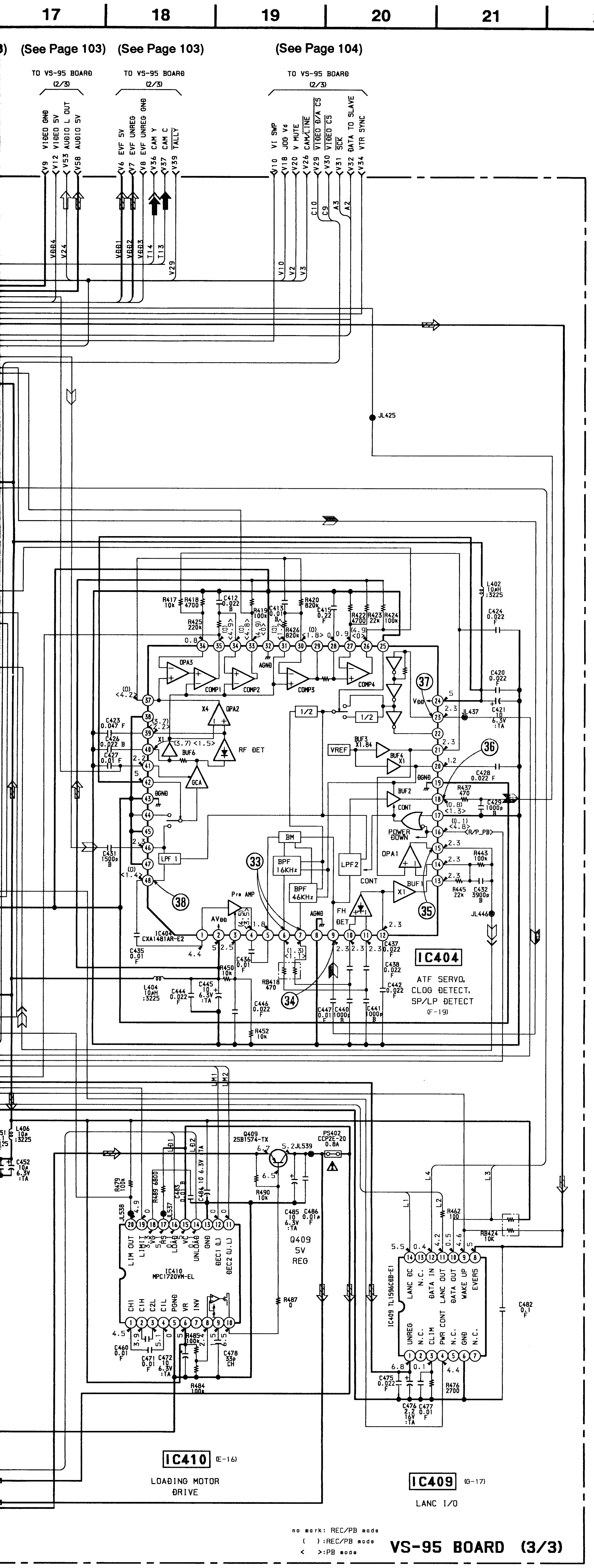
19
20
(See Page 126)
TO AU-138 BOARD CN602
(See Page 100)
TO VS-95 BOARD (1/3)
(See Page 100, 103)
TO VS-95 BOARD (1/3), (2/3)
(See Page 106)
TO VS-95 BOARD (2/3)
(See Page 103)
TO VS-95 BOARD (2/3)
(See Page 103)
TO VS-95 BOARD (2/3)
(See Page 103)
TO VS-95 BOARD (2/3)
(See Page 104)
TO VS-95 BOARD (2/3)
CN401 20P
IC402 CXP80624-428R
IC402 (F-9)
SERVO, SYSTEM CONTROL
IC404 CXA1481AR-E2
IC404
ATF SER
CLOG DET
SP/LP DET
(F-19)
IC408 MC8004BM
IC408 (F-11)
DRUM MOTOR DRIVE
IC410 MPC1720VM-EL
IC410 (E-16)
LOADING MOTOR DRIVE
IC409 TL1586CDB-E1
IC409
LANC I/O
Q405 RN1302
Q405 (H-17)
LED SWITCH
Q409 2SB1574-TX
Q409 5V REG
PS402 CCP2E-20 0.8A
X403 11.719MHz
D402 MA142WK
D403 MA110-TX (E-17)
CN406
TO SL-22 BOARD W522
(See Page 120)
TO LS-33 BOARD CN004
(See Page 118)
no mark: REC/PB mode
( ) :REC/PB mode
< >:PB mode
VS-95

## SERVO SYSTEM CONTROL


17
18
19
20
21
22
23
24
25
26
27
(See Page 103)
(See Page 103)
(See Page 104)
TO VS-95 BOARD (2/3)
TO VS-95 BOARD (2/3)
TO VS-95 BOARD (2/3)
V9 VIDEO GND
V12 VIDEO 5V
V53 AUDIO L OUT
V58 AUDIO 5V
V6 EVF 5V
V7 EVF UNREG
V8 EVF UNREG GND
V36 CAM Y
V37 CAM C
V39 TALLY
V10 VI SWP
V18 JOG Vd
V20 V MUTE
V26 CAM/LINE
V29 VIDEO B/A CS
V30 VIDEO CS
V31 SCK
V32 DATA TO SLAVE
V34 VTR SYNC
JL425
IC404 CXA1481AR-E2
IC404
ATF SERVO,
CLOG DETECT,
SP/LP DETECT
(F-19)
OPA3
COMP1
COMP2
COMP3
COMP4
OPA2
RF DET
BUF6
GCA
LPF 1
BPF 16KHz
BPF 46KHz
BM
LPF2
OPA1
BUF1
BUF2
BUF3
CONT
POWER DOWN
VREF
Pre AMP
FH DET
AGND
BGND
1/2
1/2
R/P PB
IC410 MPC1720VM-EL
IC410 (E-16)
LOADING MOTOR DRIVE
Q409 2SB1574-TX
Q409 5V REG
PS402 CCP2E-20 0.8A
IC409 TL1596CEB-E1
IC409 (G-17)
LANC I/O
LANC DC
N.C.
DATA IN
LANC OUT
DATA OUT
WAKE UP
EVERS
UNREG
CLIM
PWR CONT
GND
LIM OUT
LIMIT
LOAD
UNLOAD
DEC1 (L)
DEC2 (U.L)
CH1
C1H
C2L
PGND
VR
INV
no mark: REC/PB mode
( ):REC/PB mode
< >:PB mode
VS-95 BOARD (3/3)

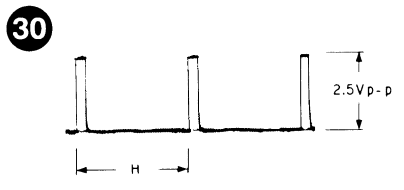
- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡ | | ➡ |
| PB | | | | ⇨ |

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▷ | |
| Drum servo (speed and phase) | | ▷ | |
| Capstan speed servo | | | |
| Capstan phase servo | | | ⊐» |
| Capstan servo (speed and phase) | | ➡» | |
| Ref. signal | ➡ | ➡ | ⊐ |

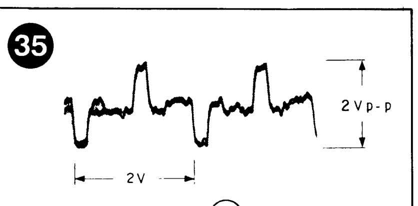
## VS-95 BOARD(3/3)

㉚



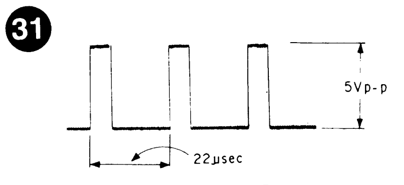
IC402 (64) REC/PB

㉟



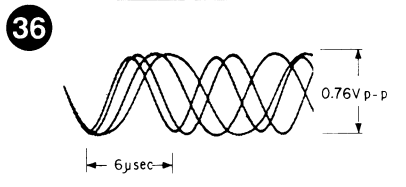
IC404 ⑮ PB

㉛



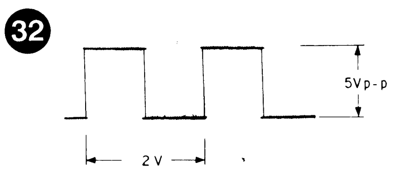
IC402 (73),(74) REC/PB

㊱



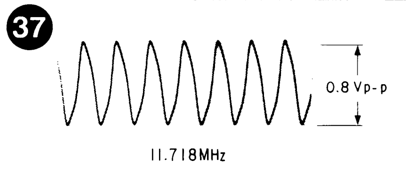
IC404 ⑱ REC

㉜



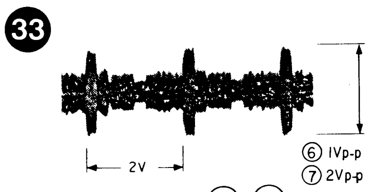
IC402 (97) REC/PB

㊲



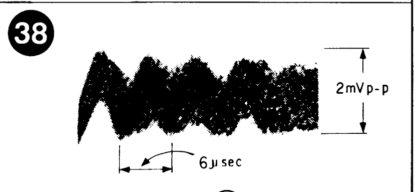
IC404 ㉓ REC/PB

㉝



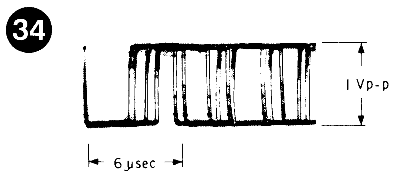
IC404 ⑥ ⑦ PB

㊳



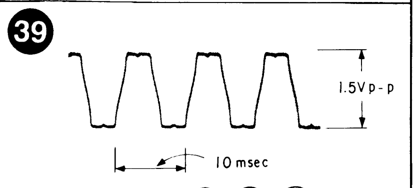
IC404 ㊽ PB

㉞



IC404 ⑨ REC/PB

㊴



IC408 ⑭,⑯,⑱ REC/PB

## CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH),

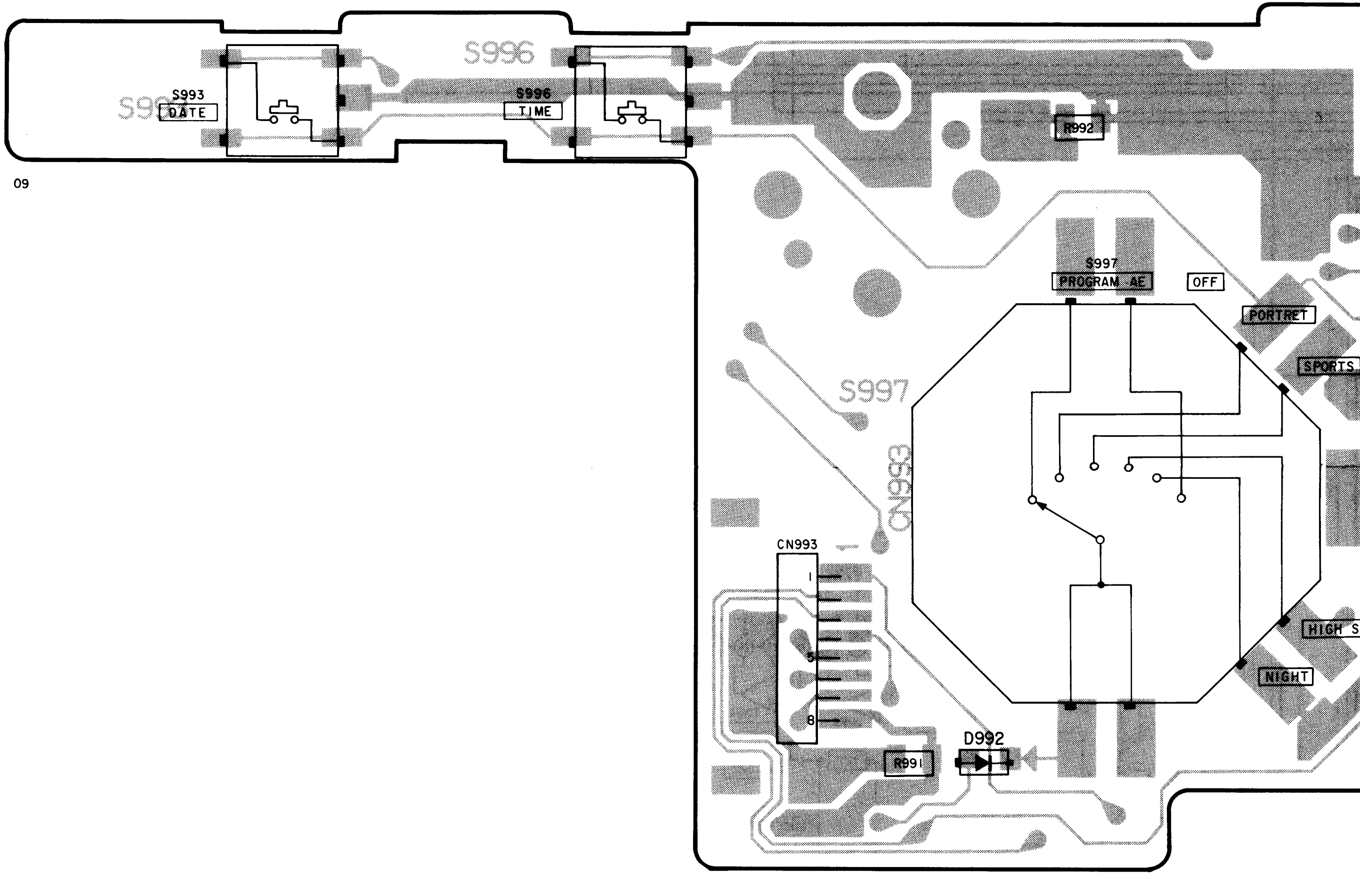
— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —

- **For printed wiring boards.**
- CF-32, ED-35, MF-191, VK-27 boards is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

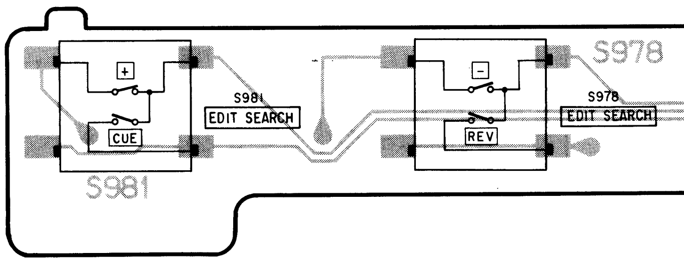
| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

D992 8-719-404-

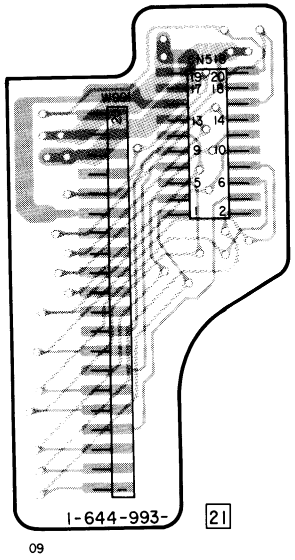
**CF-32** BOARD (COMPONENT SIDE)


S996
S993
DATE
S996
TIME
R992
S997
PROGRAM AE
OFF
PORTRET
SPORTS
S997
CN993
CN993
1
5
8
D992
R991
HIGH S
NIGHT
09

**VK-27** BOARD (COMPONENT SIDE)

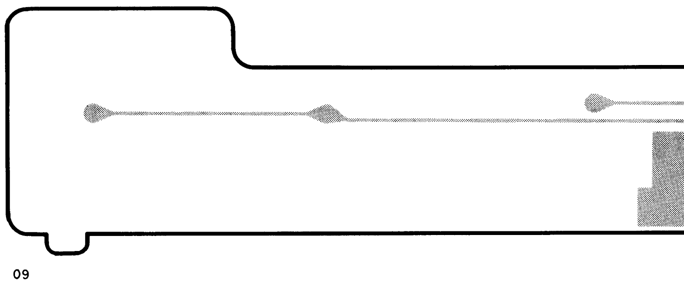

+
S981
EDIT SEARCH
CUE
S981
−
REV
S978
S978
EDIT SEARCH

**CN-65** BOARD
(CONDUCTOR SIDE)

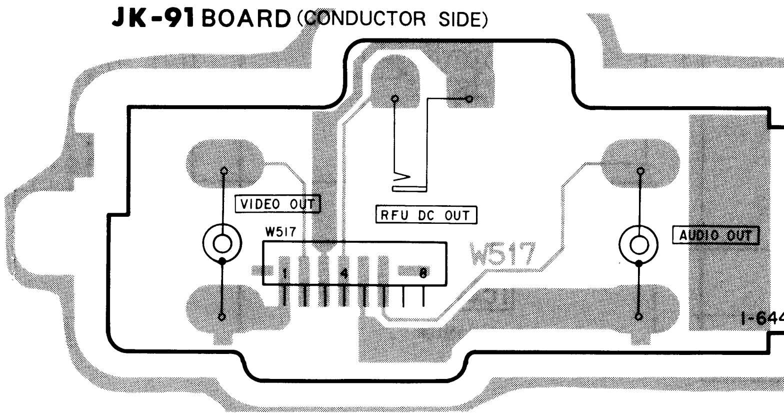

19 20
17 18
13 14
9 10
5 6
1 2
1-644-993-
21
09

- **For printed wiring boards.**
- CN-65 board is the printed wiring board which has four layers structure but inner two layers' patterns and component side pattern are omitted.
- ● : Through hole is omitted.

**VK-27** BOARD (CONDUCTOR SIDE)



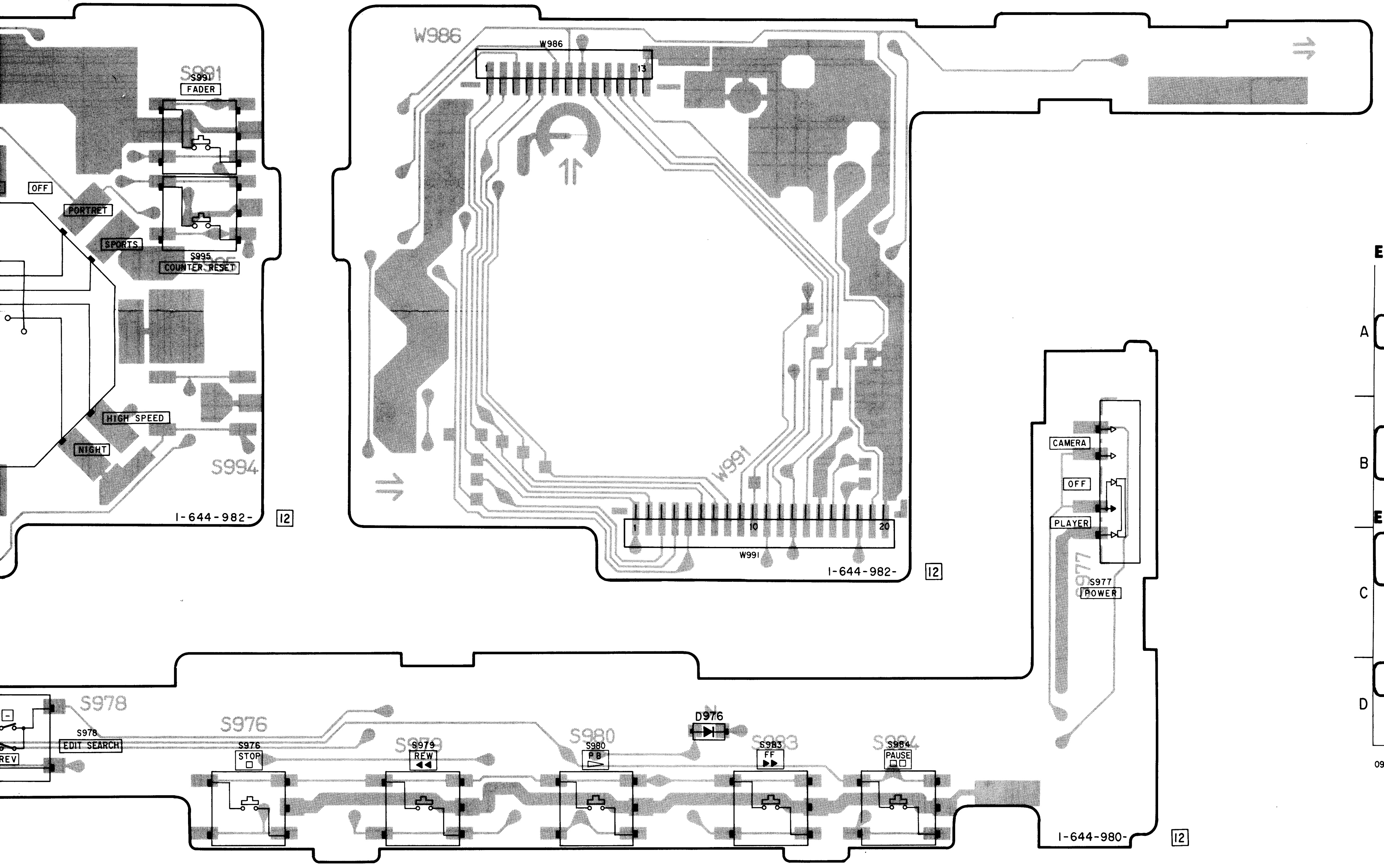
**JK-91** BOARD (CONDUCTOR SIDE)


VIDEO OUT
W517
1
4
RFU DC OUT
W517
AUDIO OUT
1-644

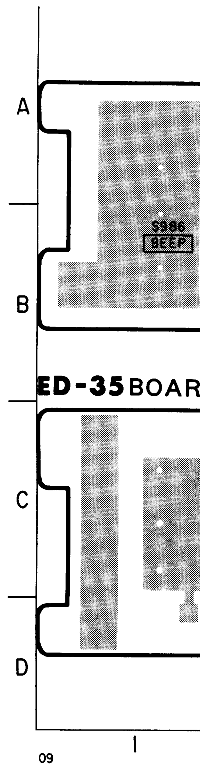
( DIODE )

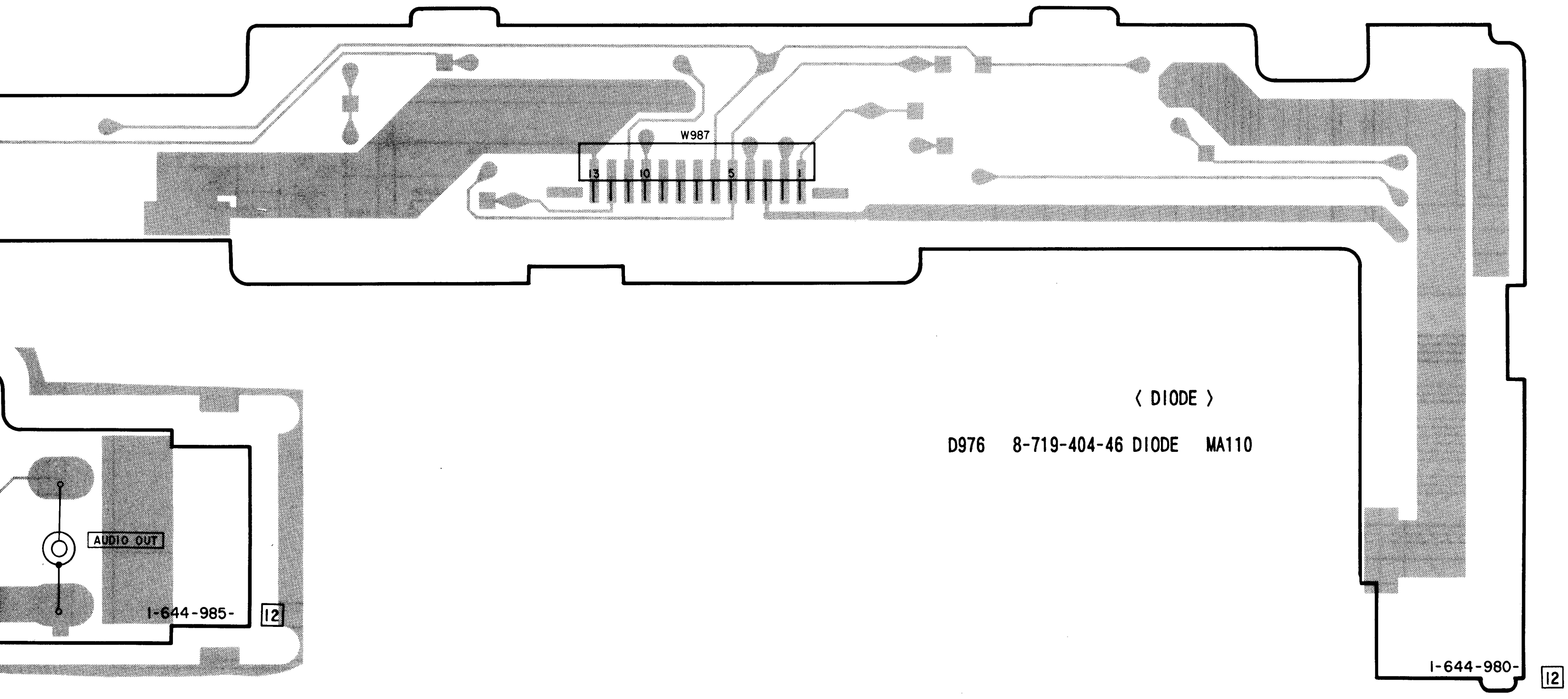
D992 8-719-404-46 DIODE MA110

**CF-32** BOARD (CONDUCTOR SIDE)


S991
FADER
OFF
PORTRET
SPORTS
S995
COUNTER RESET
HIGH SPEED
NIGHT
S994
1-644-982-
12
W986
1
13
W991
1
10
20
1-644-982-
12
CAMERA
OFF
PLAYER
S977
POWER
S978
S978
EDIT SEARCH
REV
S976
S976
STOP
S979
REW
S980
PB
D976
S983
FF
S984
PAUSE
1-644-980-
12

**ED-35** BOARD

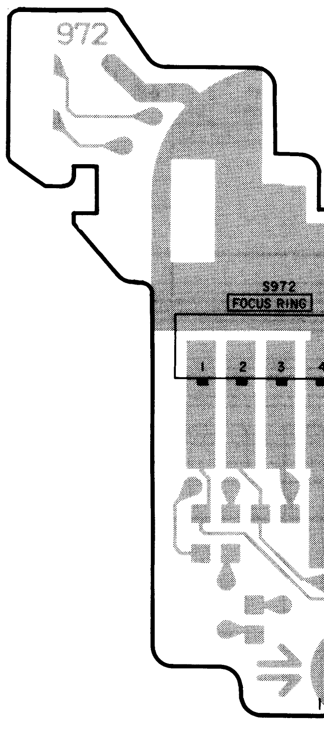

A
B
S986
BEEP
C
D
09


W987
13
10
5
1
AUDIO OUT
1-644-985-
12
1-644-980-
12

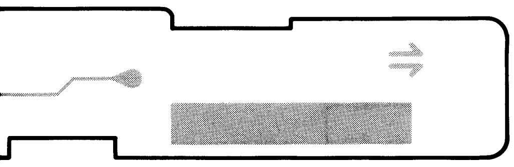
( DIODE )

D976 8-719-404-46 DIODE MA110

**MF-191** BOARD(COMPONEN


972
S972
FOCUS RING
1
2
3

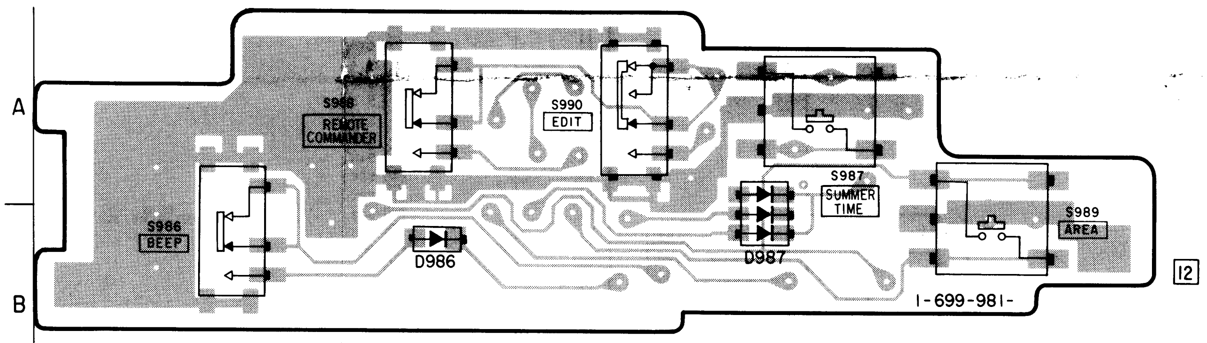
09



( DIODE )

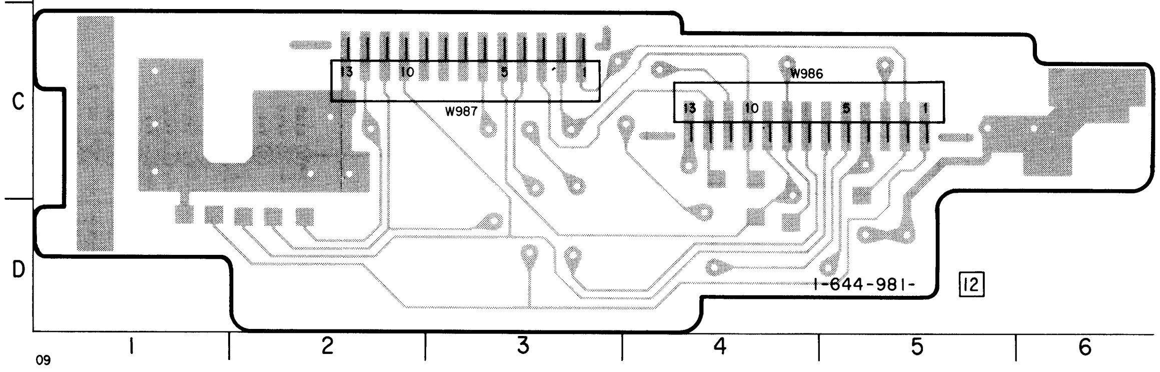
| | | | |
|---|---|---|---|
| D986 | 8-719-404-46 | DIODE | MA110 |
| D987 | 8-719-404-40 | DIODE | MA121 |

**ED-35** BOARD (COMPONENT SIDE)

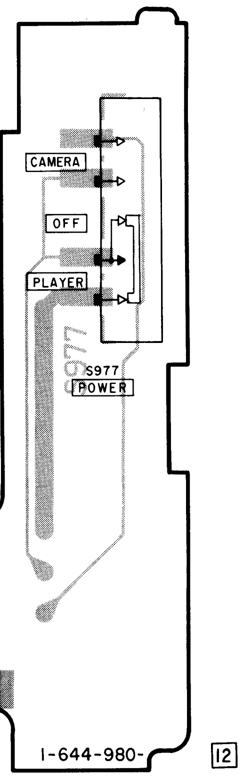


A
B
S988
REMOTE COMMANDER
S990
EDIT
S986
BEEP
D986
D987
S987
SUMMER TIME
S989
AREA
1-699-981-
12

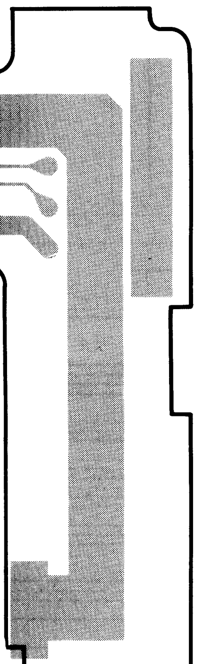
**ED-35** BOARD (CONDUCTOR SIDE)



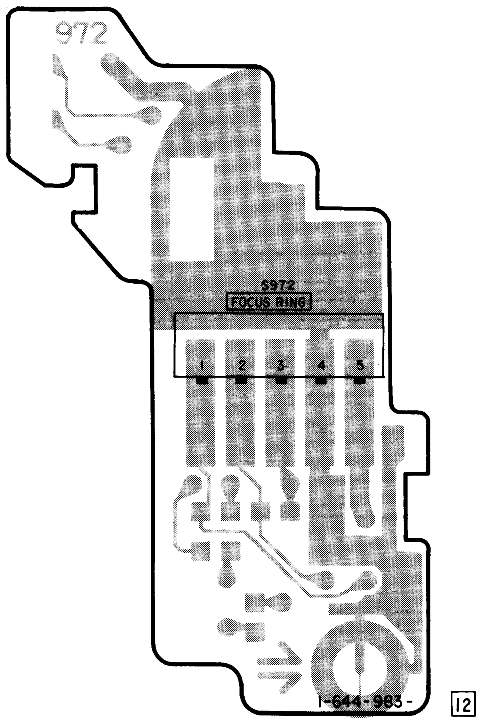
C
D
13
10
5
1
W987
W986
1-644-981-
12
09
1
2
3
4
5
6



CAMERA
OFF
PLAYER
S977
POWER
1-644-980-
12

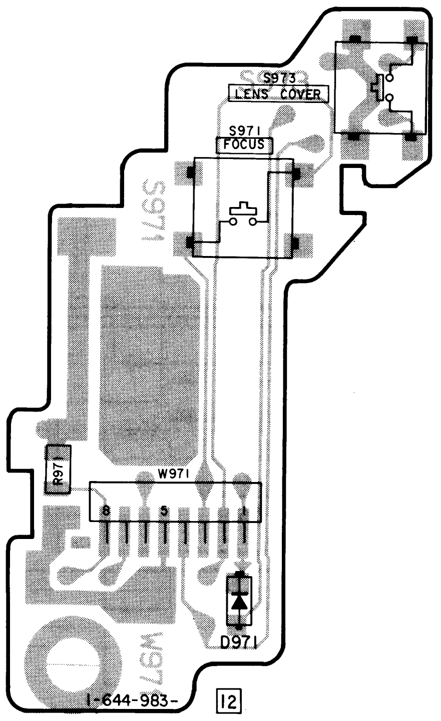


**MF-191** BOARD(COMPONENT SIDE)



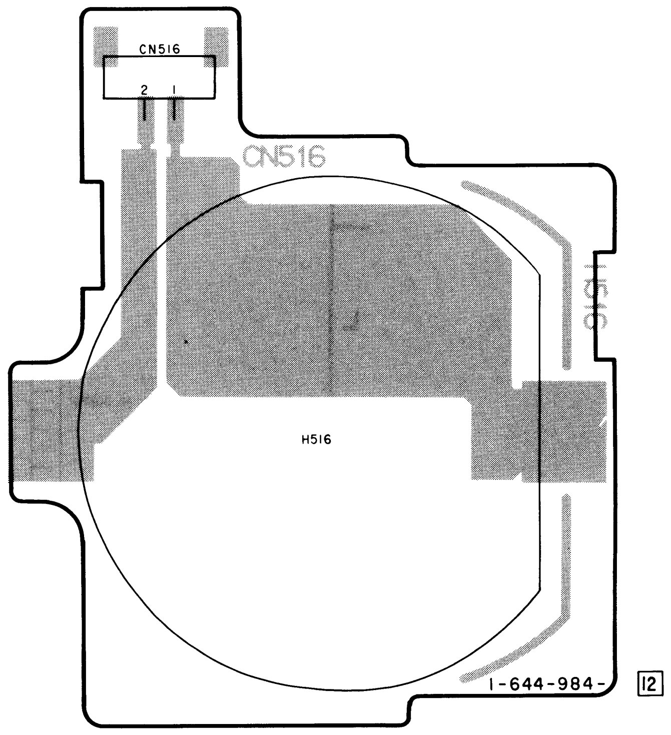
S972
FOCUS RING
1
2
3
4
5
1-644-983-
12
09

**MF-191** BOARD (CONDUCTOR SIDE)



S973
LENS COVER
S971
FOCUS
R97
W971
8
5
1
D971
1-644-983-
12

**LI-44** BOARD (CONDUCTOR SIDE)



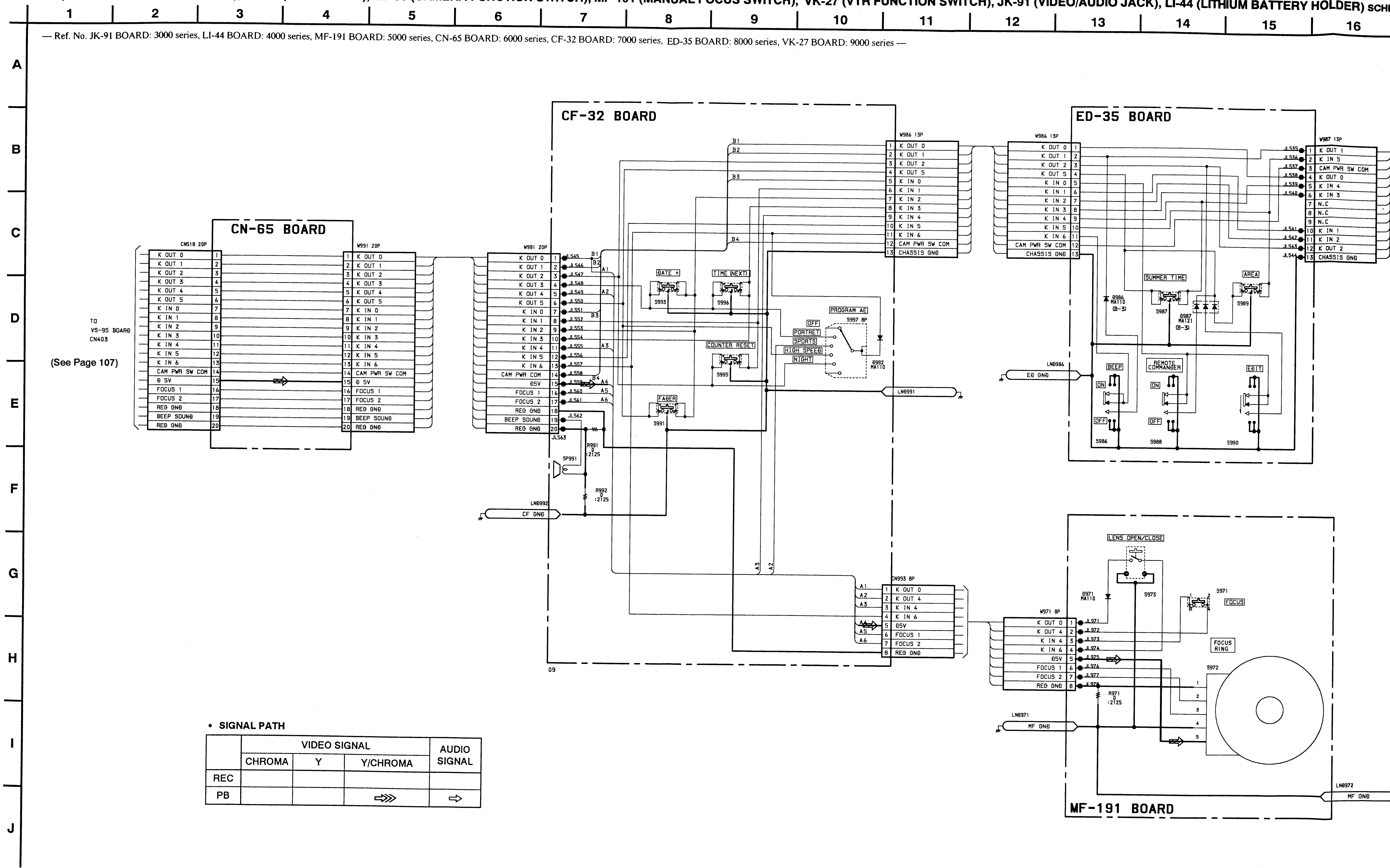
CN516
2
1
H516
1-644-984-
12

( DIODE )

| | | | |
|---|---|---|---|
| D971 | 8-719-404-46 | DIODE | MA110 |

# CF-32 (CAMERA FUNCTION SWITCH), CN-65 (BOARD LINK), ED-35 (CAMERA FUNCTION SWITCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITHIUM BATTERY HOLDER) SCH

— Ref. No. JK-91 BOARD: 3000 series, LI-44 BOARD: 4000 series, MF-191 BOARD: 5000 series, CN-65 BOARD: 6000 series, CF-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
CN-65 BOARD
CN518 20P
W991 20P
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
Ə 5V
FOCUS 1
FOCUS 2
REG GND
BEEP SOUND
REG GND
TO VS-95 BOARD CN403
(See Page 107)
CF-32 BOARD
CAM PWR COM
B1
B2
B3
B4
A1
A2
A3
A4
A5
A6
DATE +
TIME (NEXT)
COUNTER RESET
FADER
PROGRAM AE
OFF
PORTRET
SPORTS
HIGH SPEED
NIGHT
S991
S993
S995
S996
S997 8P
D992 MA110
SP991
R991 0 :2125
R992 0 :2125
LND992
CF GND
LND991
W986 13P
CAM PWR SW COM
CHASSIS GND
CN993 8P
ED-35 BOARD
W987 13P
N.C
K OUT 2
SUMMER TIME
AREA
D986 MA110 (B-3)
D987 MA121 (B-3)
S987
S989
BEEP
REMOTE COMMANDER
EDIT
ON
OFF
S986
S988
S990
LND986
ED GND
MF-191 BOARD
LENS OPEN/CLOSE
D971 MA110
S973
S971
FOCUS
FOCUS RING
S972
W971 8P
R971 0 :2125
LND971
MF GND
LND972
09

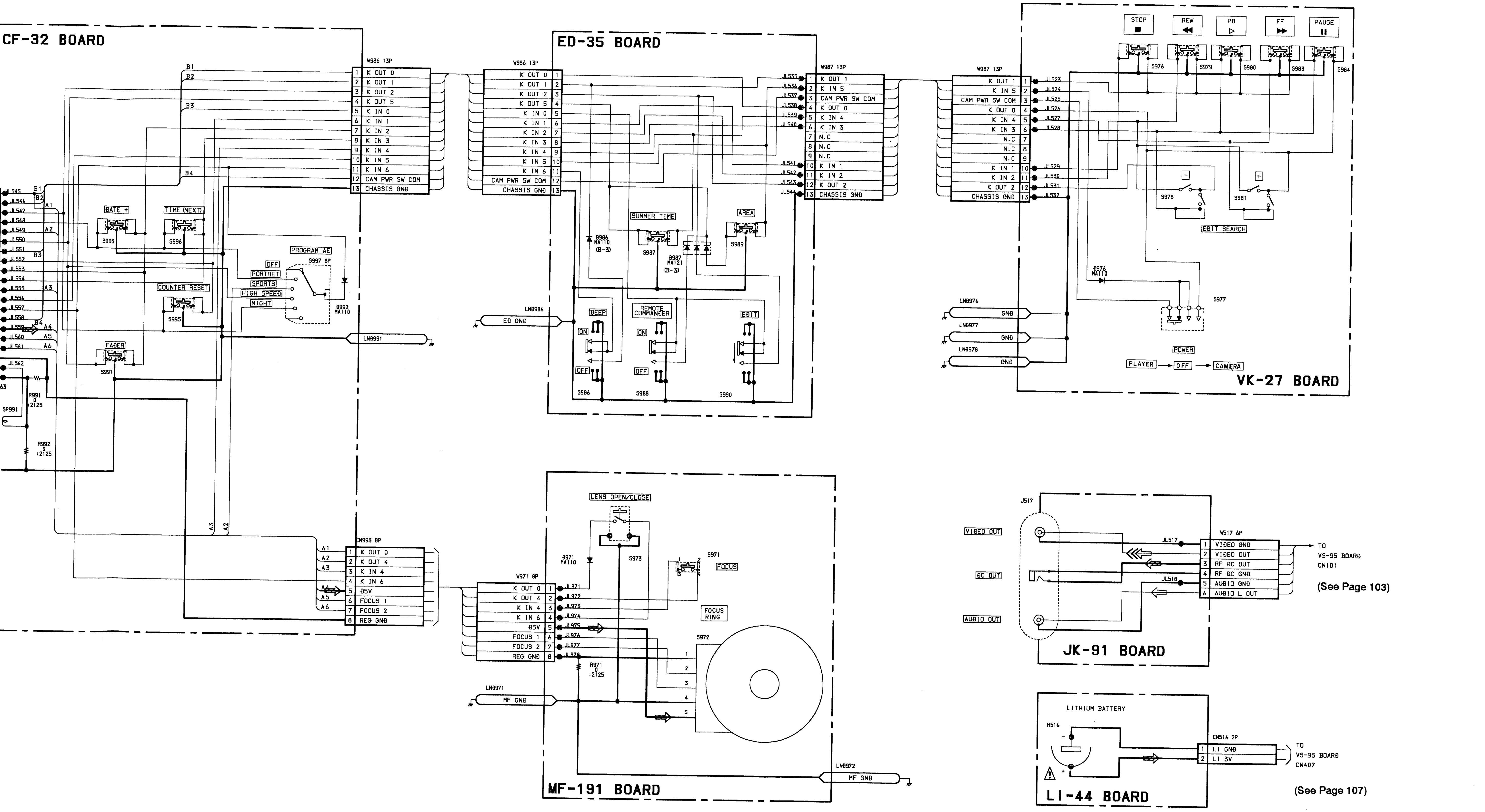
• SIGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | |
| PB | | | ⇨ | ⇨ |

## TCH), MF-191 (MANUAL FOCUS SWITCH), VK-27 (VTR FUNCTION SWITCH), JK-91 (VIDEO/AUDIO JACK), LI-44 (LITHIUM BATTERY HOLDER) SCHEMATIC DIAGRAMS

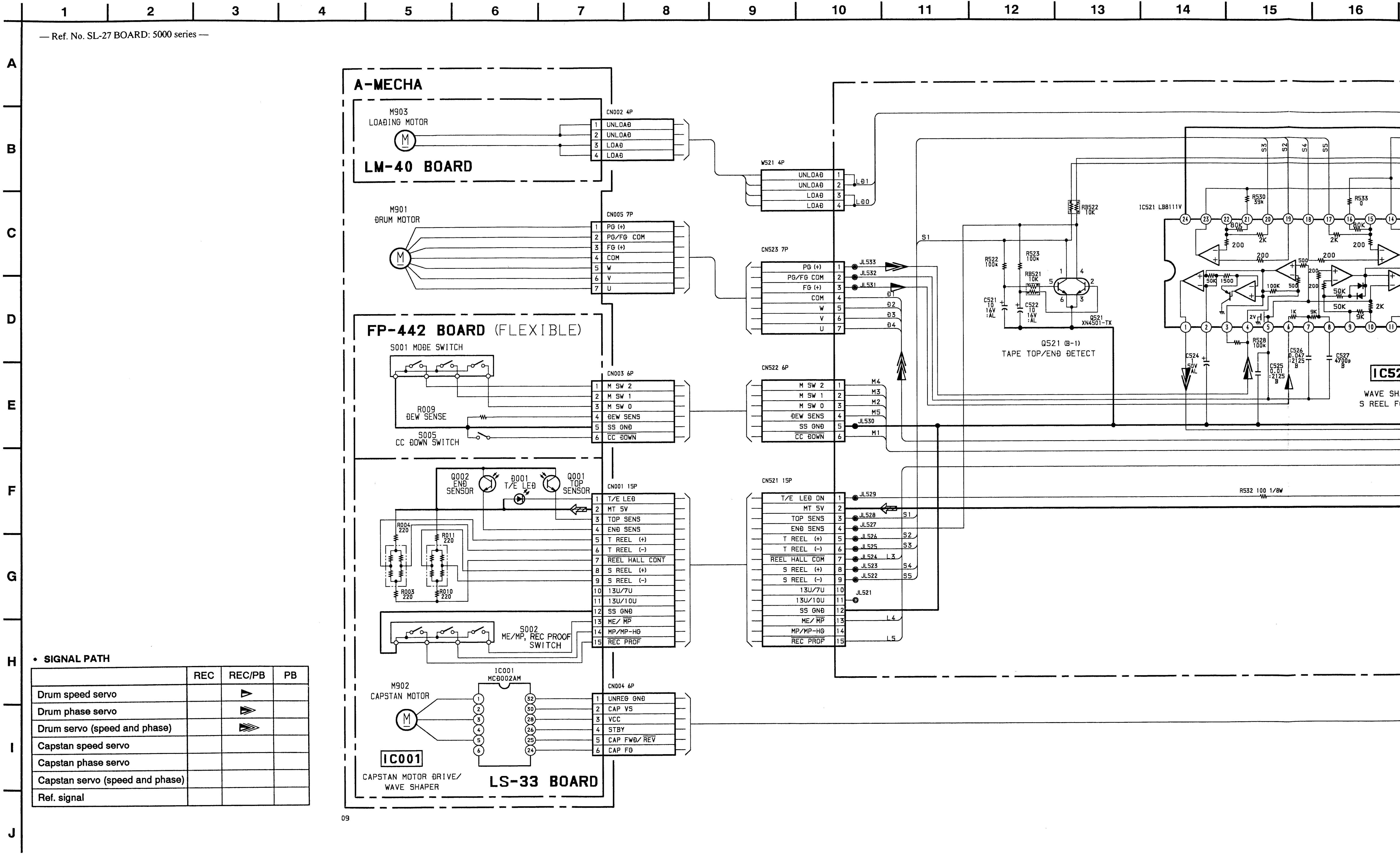
7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22

F-32 BOARD: 7000 series, ED-35 BOARD: 8000 series, VK-27 BOARD: 9000 series —


CF-32 BOARD
W986 13P
K OUT 0
K OUT 1
K OUT 2
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
CAM PWR SW COM
CHASSIS GND
DATE +
TIME (NEXT)
S993
S996
PROGRAM AE
S997 8P
OFF
PORTRET
SPORTS
HIGH SPEED
NIGHT
D992 MA110
COUNTER RESET
S995
FADER
S991
LN8991
R991 0 :2125
R992 0 :2125
SP991
CN993 8P
K OUT 4
K IN 6
D5V
FOCUS 1
FOCUS 2
REG GND
ED-35 BOARD
W987 13P
N.C
K OUT 2
SUMMER TIME
AREA
D986 MA110 (B-3)
S987
D987 MA121 (B-3)
S989
LN8986
ED GND
BEEP
ON
OFF
REMOTE COMMANDER
EDIT
S986
S988
S990
STOP
REW
PB
FF
PAUSE
S976
S979
S980
S983
S984
S978
S981
EDIT SEARCH
D976 MA110
S977
LN8976
LN8977
LN8978
GND
POWER
PLAYER
CAMERA
VK-27 BOARD
MF-191 BOARD
LENS OPEN/CLOSE
D971 MA110
S973
S971
FOCUS
FOCUS RING
W971 8P
S972
R971 0 :2125
LN8971
MF GND
LN8972
J517
VIDEO OUT
DC OUT
AUDIO OUT
JL517
JL518
W517 6P
VIDEO GND
RF DC OUT
RF DC GND
AUDIO GND
AUDIO L OUT
TO VS-95 BOARD CN101
(See Page 103)
JK-91 BOARD
LITHIUM BATTERY
H516
CN516 2P
LI GND
LI 3V
TO VS-95 BOARD CN407
(See Page 107)
LI-44 BOARD

## SL-27 (MECHA CONTROL), FP-442(TAPE SENSOR), LM-40 (LOADING MOTOR DRIVE), LS-33 (CAPSTAN MOTOR DRIVE, TAPE SENSOR) SCHEMATIC DIAGRAMS

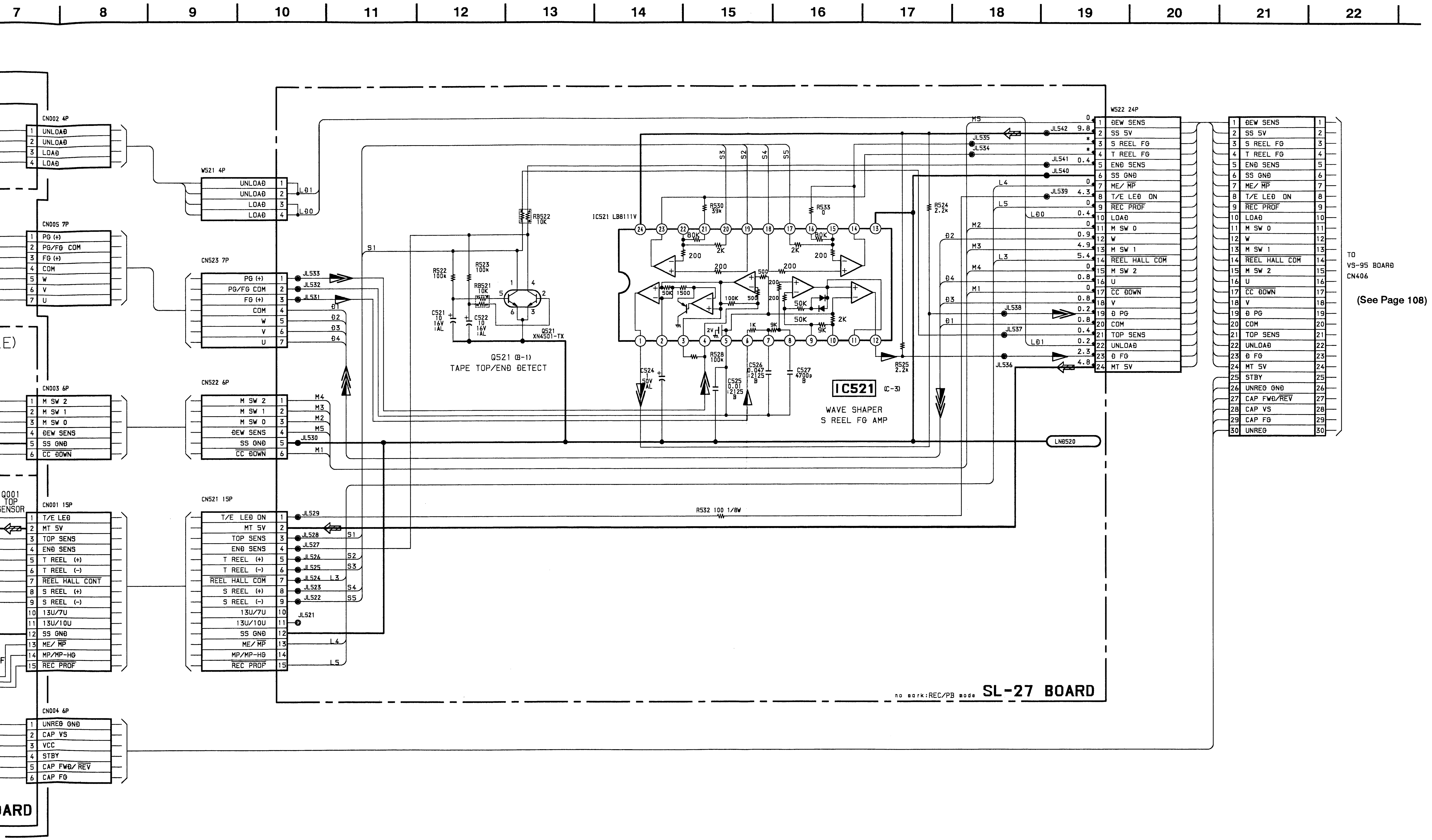
— Ref. No. SL-27 BOARD: 5000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
A-MECHA
M903
LOADING MOTOR
LM-40 BOARD
CN002 4P
UNLOAD
UNLOAD
LOAD
LOAD
M901
DRUM MOTOR
CN005 7P
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
FP-442 BOARD (FLEXIBLE)
S001 MODE SWITCH
R009
DEW SENSE
S005
CC DOWN SWITCH
CN003 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
Q002
END
SENSOR
D001
T/E LED
Q001
TOP
SENSOR
R004
220
R011
220
R003
220
R010
220
CN001 15P
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (-)
REEL HALL CONT
S REEL (+)
S REEL (-)
13U/7U
13U/10U
SS GND
ME/ MP
MP/MP-HG
REC PROF
S002
ME/MP, REC PROOF
SWITCH
M902
CAPSTAN MOTOR
IC001
MCD002AM
IC001
CAPSTAN MOTOR DRIVE/
WAVE SHAPER
LS-33 BOARD
CN004 6P
UNREG GND
CAP VS
VCC
STBY
CAP FWD/ REV
CAP FG
09
W521 4P
LD1
LD0
CN523 7P
JL533
JL532
JL531
D1
D2
D3
D4
CN522 6P
M4
M3
M2
M5
JL530
M1
CN521 15P
JL529
JL528
JL527
JL526
JL525
JL524
JL523
JL522
JL521
S1
S2
S3
S4
S5
L3
L4
L5
R522
100k
R523
100k
RB521
10K
RB522
10K
C521
10
16V
:AL
C522
10
16V
:AL
Q521
XN4501-TX
Q521 (B-1)
TAPE TOP/END DETECT
IC521 LB8111V
R530
39k
R533
0
80K
2K
200
500
50K
1500
100K
1K
9K
2V
R528
100k
C524
1
50V
AL
C525
0.01
:2125
B
C526
0.047
:2125
B
C527
4700p
B
IC52
WAVE SH
S REEL F
R532 100 1/8W

- **SIGNAL PATH**

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▷▷ | |
| Drum servo (speed and phase) | | ▷▷▷ | |
| Capstan speed servo | | | |
| Capstan phase servo | | | |
| Capstan servo (speed and phase) | | | |
| Ref. signal | | | |

## CAPSTAN MOTOR DRIVE, TAPE SENSOR) SCHEMATIC DIAGRAMS


7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
CN002 4P
UNLOAD
UNLOAD
LOAD
LOAD
CN005 7P
PG (+)
PG/FG COM
FG (+)
COM
W
V
U
E)
CN003 6P
M SW 2
M SW 1
M SW 0
DEW SENS
SS GND
CC DOWN
Q001
TOP
SENSOR
CN001 15P
T/E LED
MT 5V
TOP SENS
END SENS
T REEL (+)
T REEL (−)
REEL HALL CONT
S REEL (+)
S REEL (−)
13U/7U
13U/10U
SS GND
ME/MP
MP/MP-HG
REC PROF
CN004 6P
UNREG GND
CAP VS
VCC
STBY
CAP FWD/REV
CAP FG
ARD
W521 4P
CN523 7P
CN522 6P
CN521 15P
T/E LED ON
JL529 JL528 JL527 JL526 JL525 JL524 JL523 JL522 JL521
JL533 JL532 JL531 JL530
LD1 LD0
S1 S2 S3 S4 S5
L3 L4 L5
D1 D2 D3 D4
M1 M2 M3 M4 M5
R522 100k
R523 100k
RB521 10K
RB522 10K
C521 10 16V :AL
C522 10 16V :AL
Q521 XN4501-TX
Q521 (B-1)
TAPE TOP/END DETECT
IC521 LB8111V
R530 39k
R533 0
R524 2.2k
R525 2.2k
R528 100k
C524 1 50V AL
C525 0.01 :2125 B
C526 0.047 :2125 B
C527 4700p B
IC521 (C-3)
WAVE SHAPER
S REEL FG AMP
R532 100 1/8W
LND520
JL535 JL534 JL542 JL541 JL540 JL539 JL538 JL537 JL536
W522 24P
DEW SENS
SS 5V
S REEL FG
T REEL FG
END SENS
SS GND
ME/MP
T/E LED ON
REC PROF
LOAD
M SW 0
W
M SW 1
REEL HALL COM
M SW 2
U
CC DOWN
V
D PG
COM
TOP SENS
UNLOAD
D FG
MT 5V
STBY
UNREG GND
CAP FWD/REV
CAP VS
CAP FG
UNREG
0 9.8 * * 0.4 0 0 4.3 0 0.4 0 0.9 4.9 5.4 0 0.8 0 0.8 0.2 0.8 0.4 0.2 2.3 4.8
TO
VS-95 BOARD
CN406
(See Page 108)
no mark:REC/PB mode
SL-27 BOARD

MECHANISM CONTROL MECHANISM CONTROL

## SL-27 (MECHA CONTROL) PRINTED WIRING BOARD

— Ref. No. SL-27 BOARD: 5000 series —

- FP-442, LM-40, LS-33 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

- **For printed wiring boards.**
- SL-27 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

| | |
|---|---|
| Pattern face side: (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component side) | Parts on the parts face side seen from the parts face are indicated. |

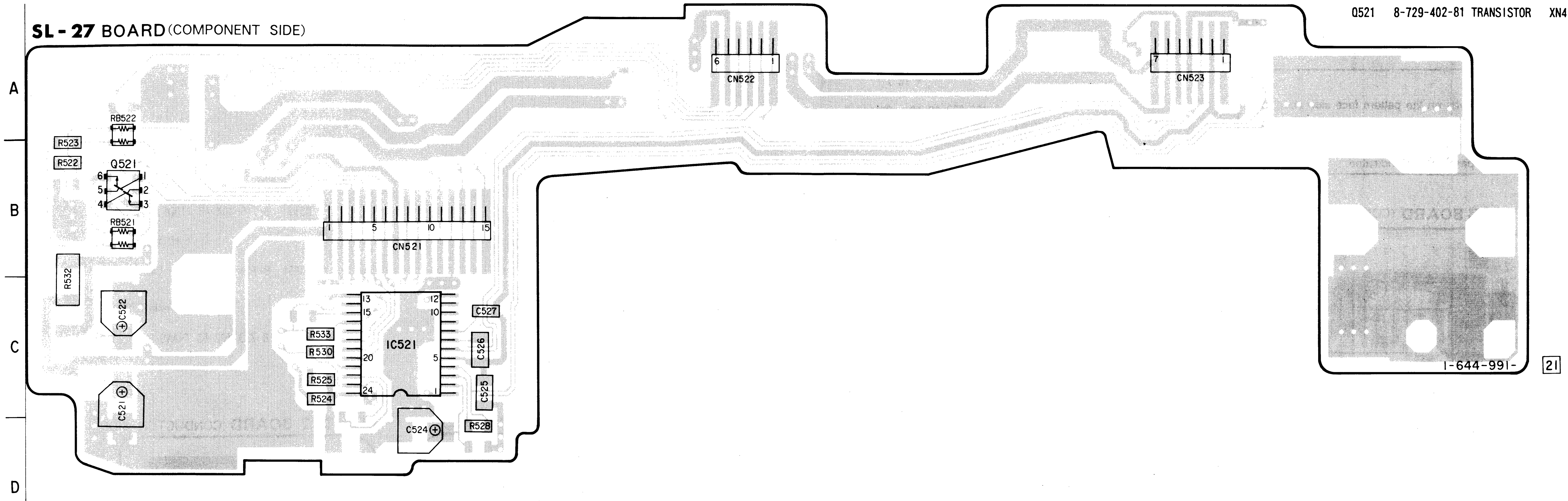
( IC )

IC521 8-759-059-09 IC LB8111V

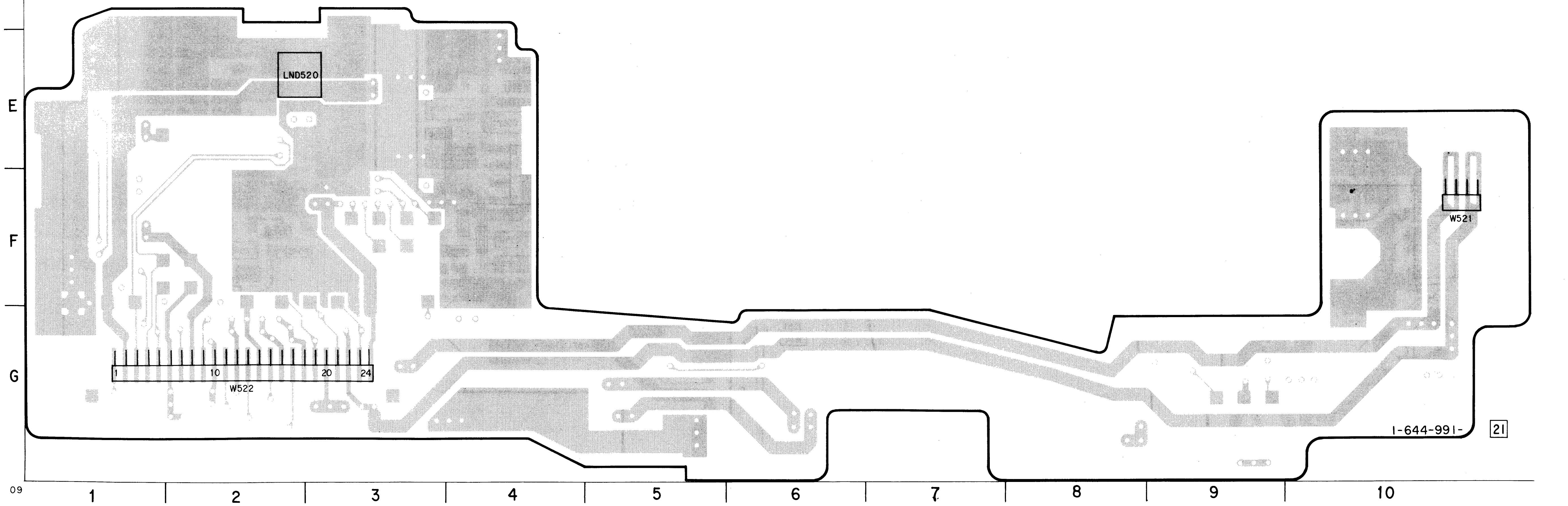
( TRANSISTOR )

Q521 8-729-402-81 TRANSISTOR XN4501

**SL-27** BOARD (COMPONENT SIDE)


A
B
C
D
RB522
R523
R522
Q521
6
5
4
1
2
3
RB521
R532
C522
C521
CN521
1
5
10
15
13
15
20
24
12
10
5
IC521
R533
R530
R525
R524
C527
C526
C525
C524
R528
CN522
6
1
CN523
7
1
1-644-991-
21

**SL-27** BOARD (CONDUCTOR SIDE)


E
F
G
LND520
W521
W522
1
10
20
24
1-644-991-
21
09
1
2
3
4
5
6
7
8
9
10

## AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) PRINTED WIRING BOARDS

— Ref. No. AU-138, MA-149 BOARDS: 2000 series —

- **For printed wiring boards.**
- AU-138, MA-149 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

| Caution: | |
|---|---|
| Pattern face side: (Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side: (Component side) | Parts on the parts face side seen from the parts face are indicated. |

〈 IC 〉

| | | | |
|---|---|---|---|
| IC601 | 8-759-823-19 | IC | CXA1488R |
| IC602 | 8-749-923-29 | IC | RS-20E-T |

〈 DIODE 〉

| | | | |
|---|---|---|---|
| D552 | 8-719-404-46 | DIODE | MA110 |

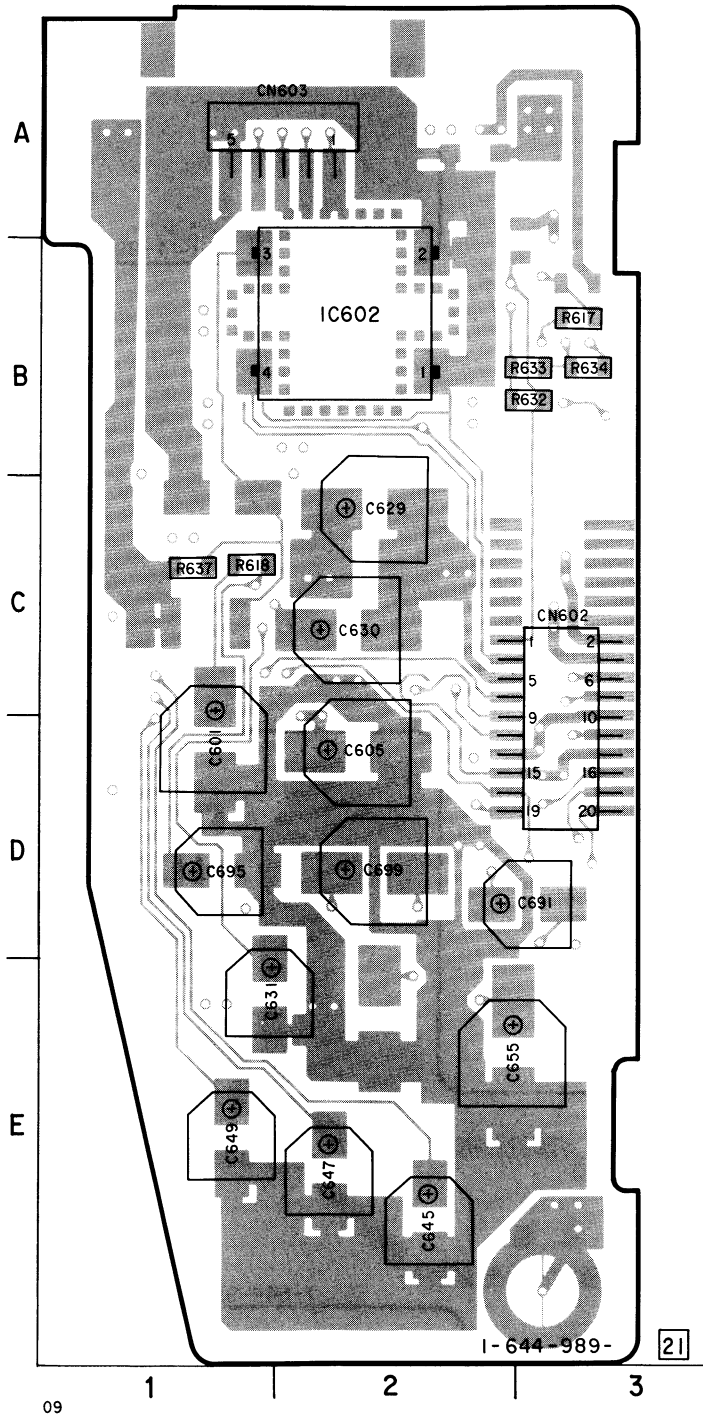
〈 IC 〉

| | | | |
|---|---|---|---|
| IC551 | 8-759-822-37 | IC | LA7293M |

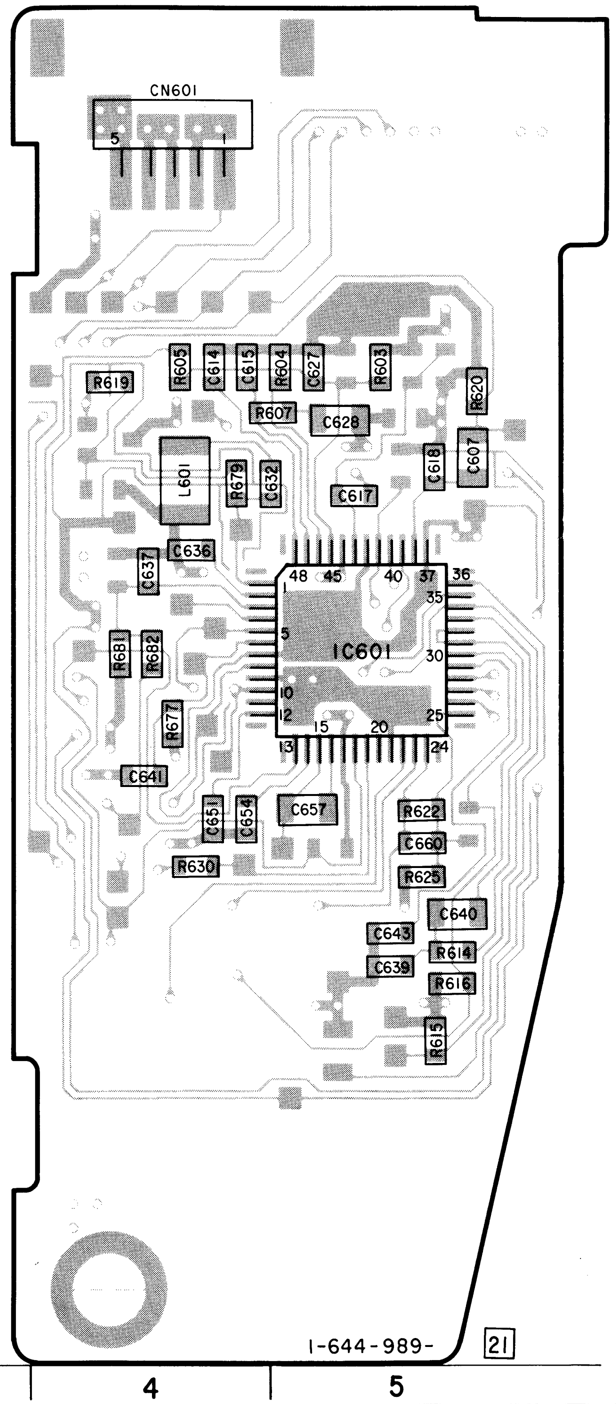
〈 TRANSISTOR 〉

| | | | |
|---|---|---|---|
| Q551 | 8-729-402-55 | TRANSISTOR | 2SB1218A-R |

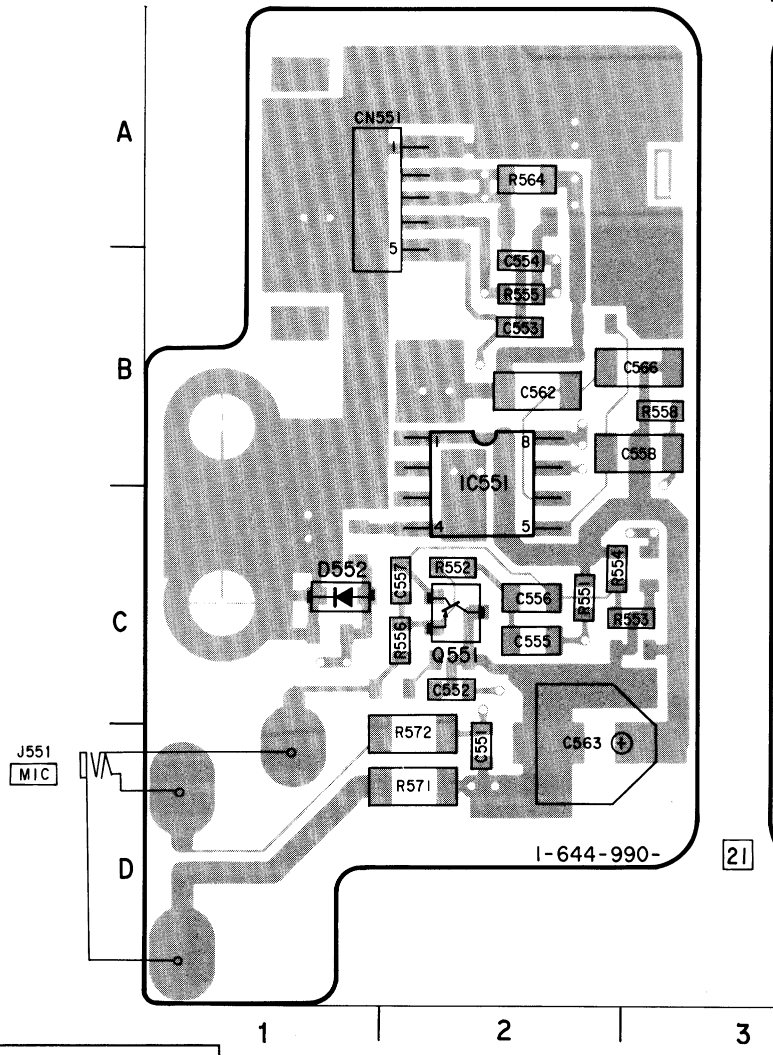
**AU-138** BOARD (COMPONENT SIDE)


A
B
C
D
E
CN603
IC602
R617
R633
R634
R632
C629
R637
R618
C630
CN602
C601
C605
C695
C699
C691
C631
C655
C649
C647
C645
1-644-989-
21
1
2
3

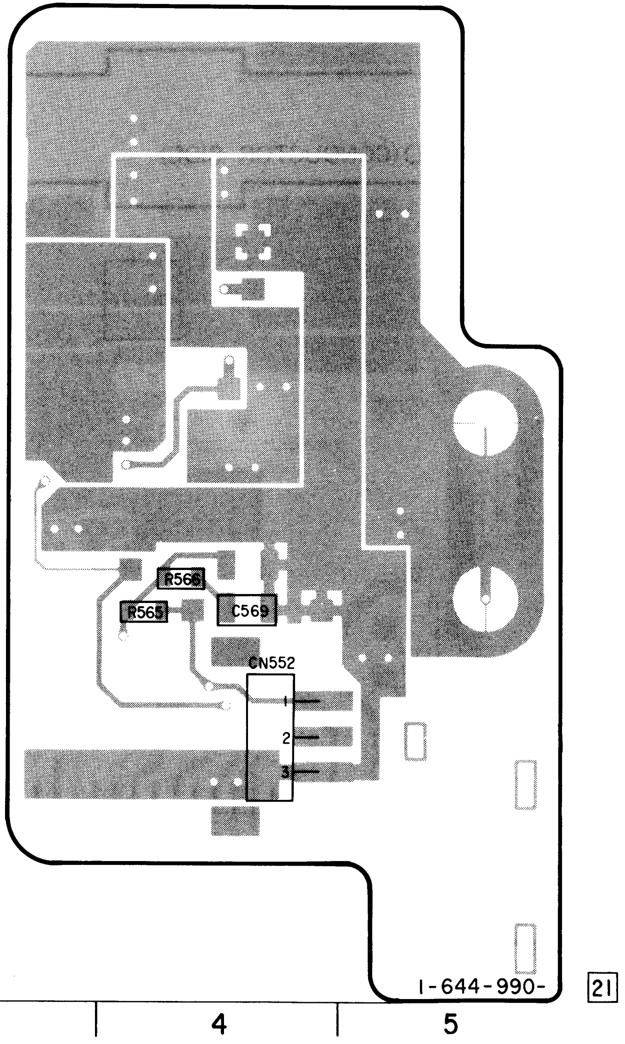
**AU-138** BOARD (CONDUCTOR SIDE)


CN601
R619
R605
C614
C615
R604
C627
R603
R620
R607
C628
L601
R679
C632
C617
C618
C607
C637
C636
IC601
R681
R682
R677
C641
C651
C654
C657
R622
C660
R625
R630
C640
C643
R614
C639
R616
R613
1-644-989-
21
4
5

**MA-149** BOARD (COMPONENT SIDE)

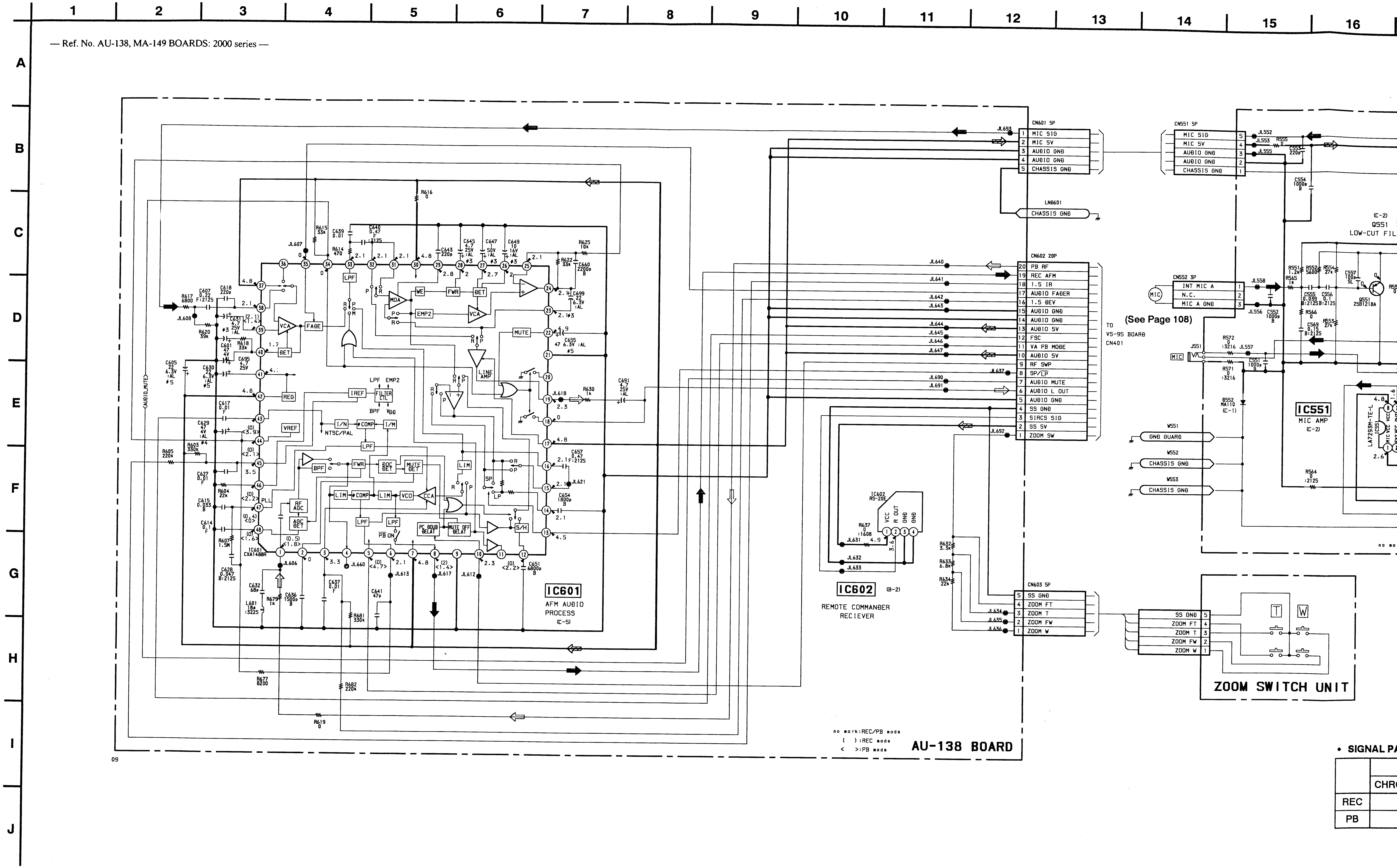

A
B
C
D
CN551
R564
C554
R555
C553
C566
C562
R558
C558
IC551
D552
C557
R552
C556
R551
R554
R553
R556
Q551
C555
C552
R572
C551
C563
R571
J551
MIC
1-644-990-
21
1
2
3

**MA-149** BOARD (CONDUCTOR SIDE)


R568
R565
C569
CN552
1-644-990-
21
4
5

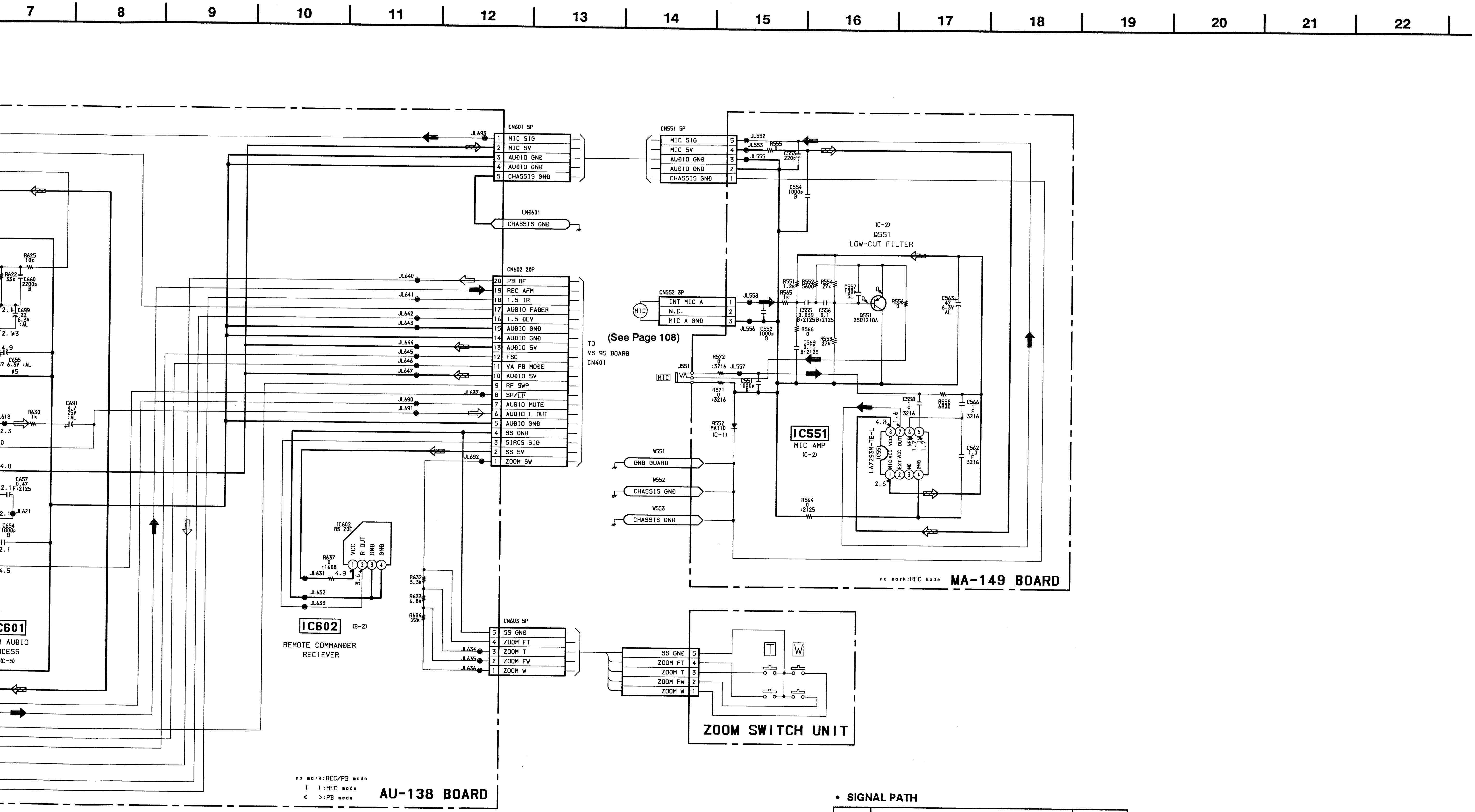
## AU-138 (AFM AUDIO), MA-149 (MIC JACK, MIC AMP) SCHEMATIC DIAGRAMS

— Ref. No. AU-138, MA-149 BOARDS: 2000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
IC601
AFM AUDIO
PROCESS
(C-5)
CXA1488R
VCA
FADE
BET
REG
VREF
IREF
FILTER CTL
LPF EMP2
BPF
I/N
COMP
I/M
NTSC/PAL
LPF
FWR
DOC BET
MUTE BET
LIM
VCO
CCA
RF AGC
AGC BET
PB ON
PC DOUB BELAY
MUTE OFF BELAY
S/H
MOA
WE
EMP2
MUTE
LINE AMP
SP
LP
CN601 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
LND601
CHASSIS GND
CN602 20P
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 DEV
AUDIO GND
AUDIO GND
AUDIO 5V
FSC
VA PB MODE
AUDIO 5V
RF SWP
SP/LP
AUDIO MUTE
AUDIO L OUT
AUDIO GND
SS GND
SIRCS SIG
SS 5V
ZOOM SW
TO
VS-95 BOARD
CN401
(See Page 108)
IC602
RS-20E
VCC
R OUT
GND
GND
IC602 (B-2)
REMOTE COMMANDER
RECIEVER
CN603 5P
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-138 BOARD
CN551 5P
CN552 3P
INT MIC A
N.C.
MIC A GND
MIC
J551
W551
GND GUARD
W552
CHASSIS GND
W553
CHASSIS GND
IC551
MIC AMP
(C-2)
LA7293M-TE-L
(C-2)
Q551
LOW-CUT FIL
2SB1218A
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
T
W
ZOOM SWITCH UNIT
<AUDIO MUTE>
09

• SIGNAL PA

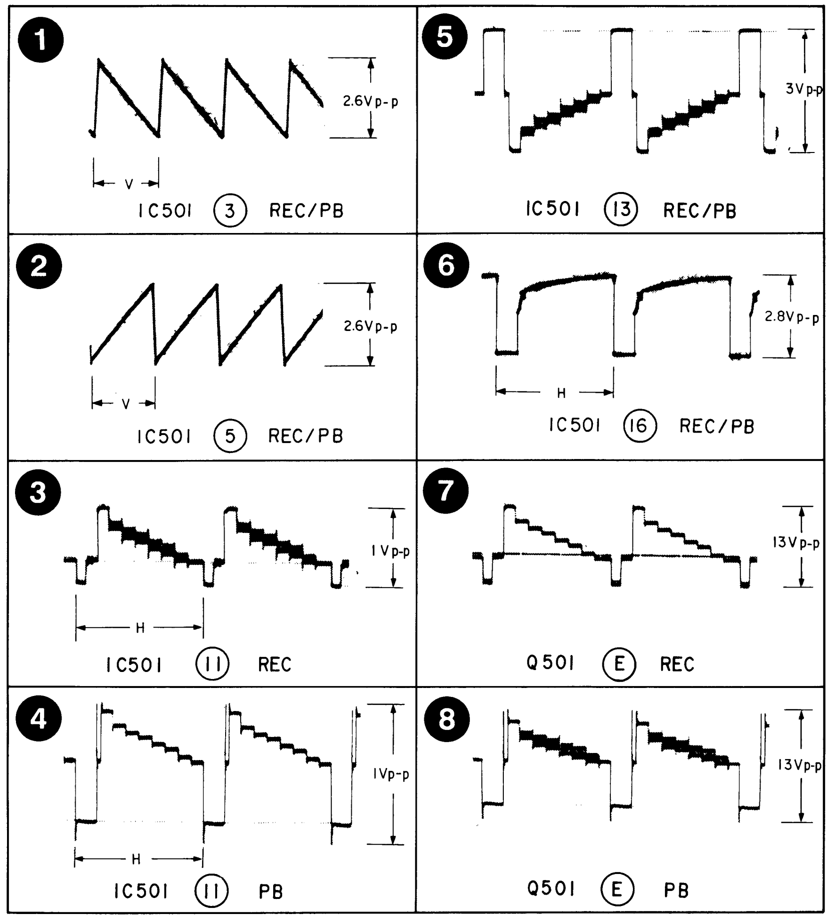
| | CHR |
|---|---|
| REC | |
| PB | |


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
CN601 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
LND601
CHASSIS GND
CN602 20P
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 DEV
AUDIO GND
AUDIO GND
AUDIO 5V
FSC
VA PB MODE
AUDIO 5V
RF SWP
SP/LP
AUDIO MUTE
AUDIO L OUT
AUDIO GND
SS GND
SIRCS SIG
SS 5V
ZOOM SW
TO VS-95 BOARD CN401
(See Page 108)
IC602 RS-20E
VCC
R OUT
GND
GND
IC602 (B-2)
REMOTE COMMANDER RECIEVER
IC601
AUDIO
PROCESS
(C-5)
CN603 5P
SS GND
ZOOM FT
ZOOM T
ZOOM FW
ZOOM W
no mark:REC/PB mode
( ):REC mode
< >:PB mode
AU-138 BOARD
CN551 5P
MIC SIG
MIC 5V
AUDIO GND
AUDIO GND
CHASSIS GND
(C-2)
Q551
LOW-CUT FILTER
Q551 2SB1218A
CN552 3P
INT MIC A
N.C.
MIC A GND
MIC
J551
D552 MA110 (C-1)
W551 GND GUARD
W552 CHASSIS GND
W553 CHASSIS GND
IC551
MIC AMP
(C-2)
LA7293M-TE-L
MIC VCC
EXT VCC
NC
GND
VCC
OUT
NFB
no mark:REC mode
MA-149 BOARD
T
W
ZOOM SWITCH UNIT

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | ➡ |
| PB | | | | ⇨ |

**VF-42** BOARD



( DIODE )

| | | | |
|---|---|---|---|
| D501 | 8-719-820-65 | DIODE TLS221 | |
| D502 | 8-719-984-02 | LED | BR4371F |
| D503 | 8-719-400-20 | DIODE MA152WA | |

( IC )

| | | |
|---|---|---|
| IC501 | 8-759-420-01 | IC AN2512S |

( TRANSISTOR )

| | | |
|---|---|---|
| Q501 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q502 | 8-729-216-31 | TRANSISTOR 2SA1163-G |
| Q504 | 8-729-106-68 | TRANSISTOR 2SD1615A-GP |

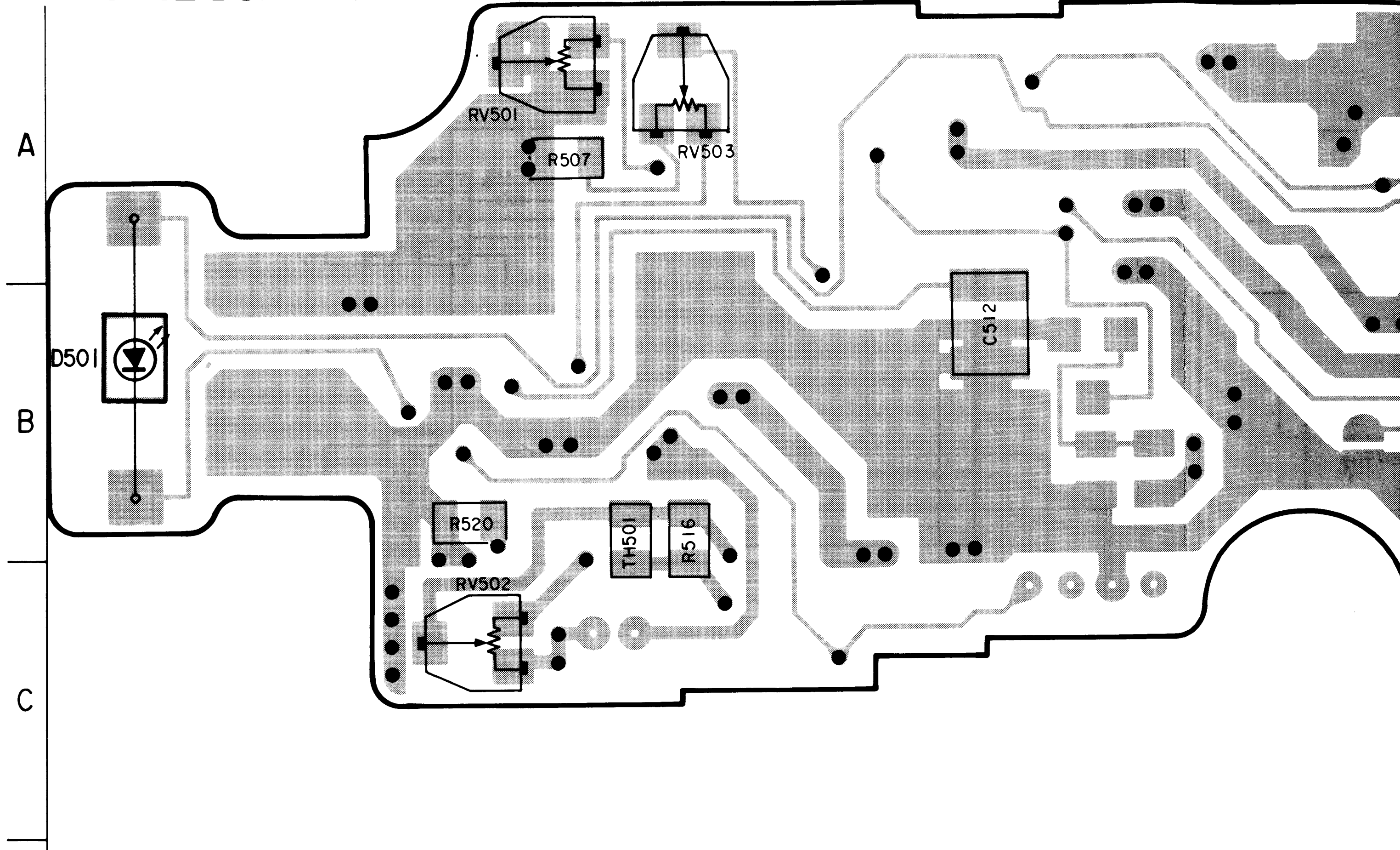
- **For printed wiring boards.**

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

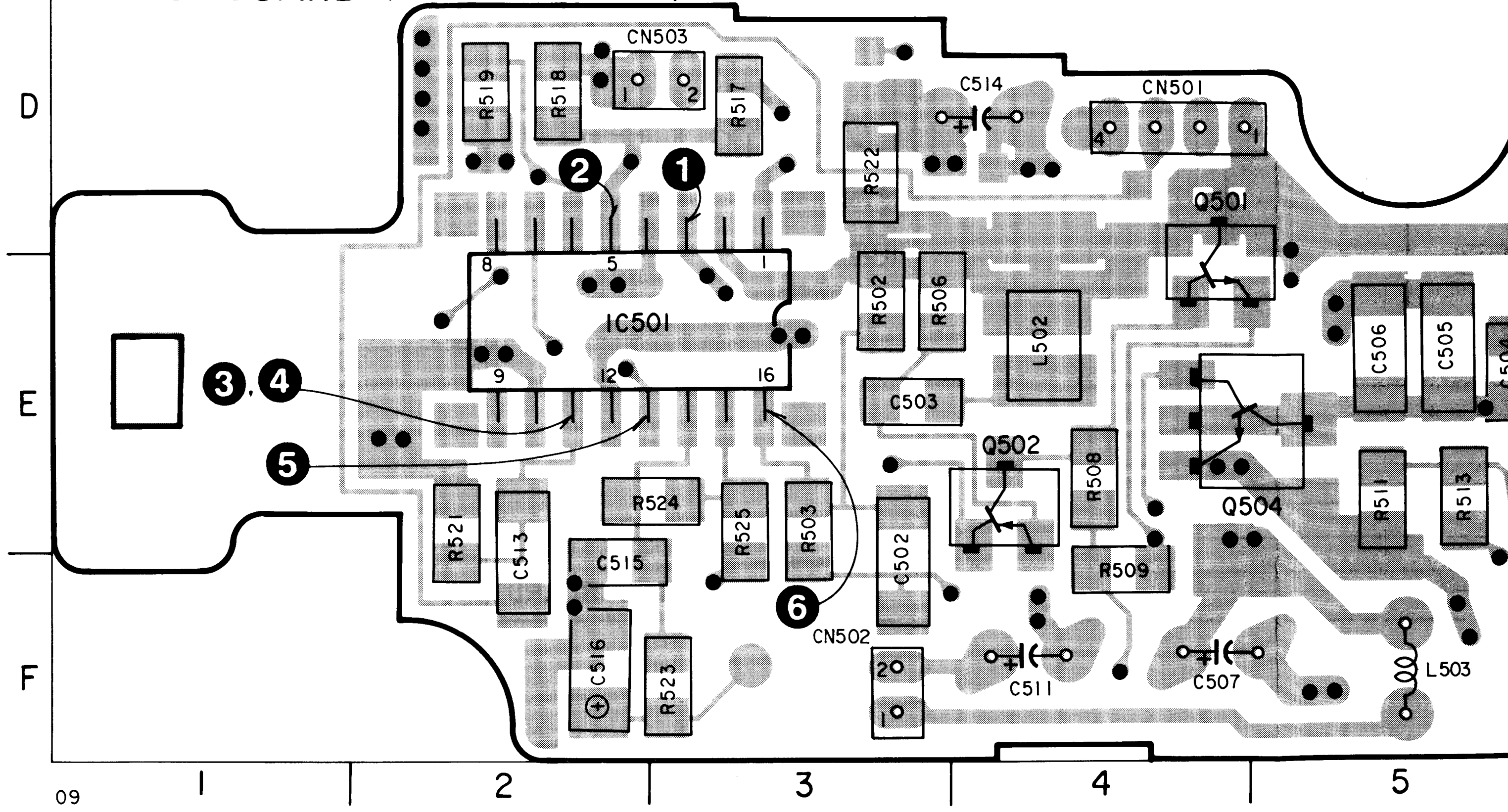
## VF-42 (VIEW FINDER) PRINTED WIRING BOARD

— Ref. No. VF-42 BOARD: 1000 series —

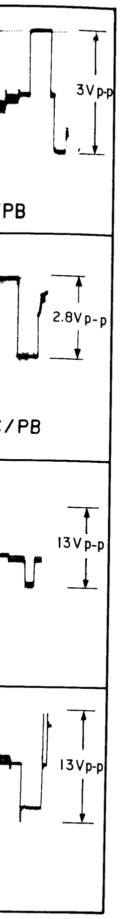
**VF-42** BOARD (COMPONENT SIDE)


A
B
C
RV501
RV503
R507
D501
C512
R520
TH501
R516
RV502

**VF-42** BOARD (CONDUCTOR SIDE)


D
E
F
R519
R518
CN503
1
2
R517
C514
CN501
4
1
R522
2
1
8
5
1
IC501
9
12
16
Q501
R502
R506
L502
C506
C505
3,4
5
C503
Q502
R508
Q504
R511
R513
R521
C513
R524
R525
R503
C515
C502
R509
6
CN502
C516
R523
2
1
C511
C507
L503
09
1
2
3
4
5

— Ref. No. VF-42 BOARD: 1000 series —

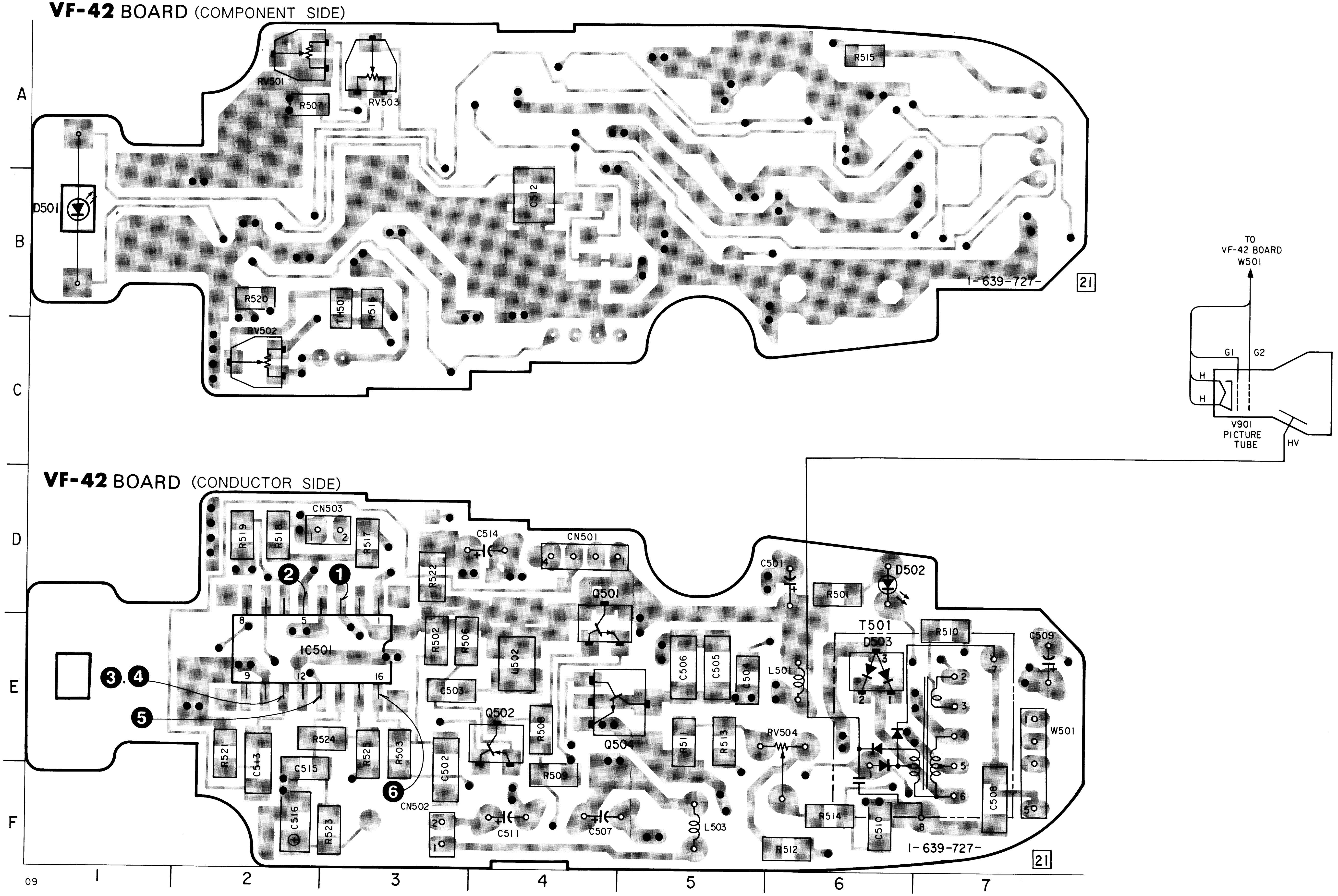


en from

rom the

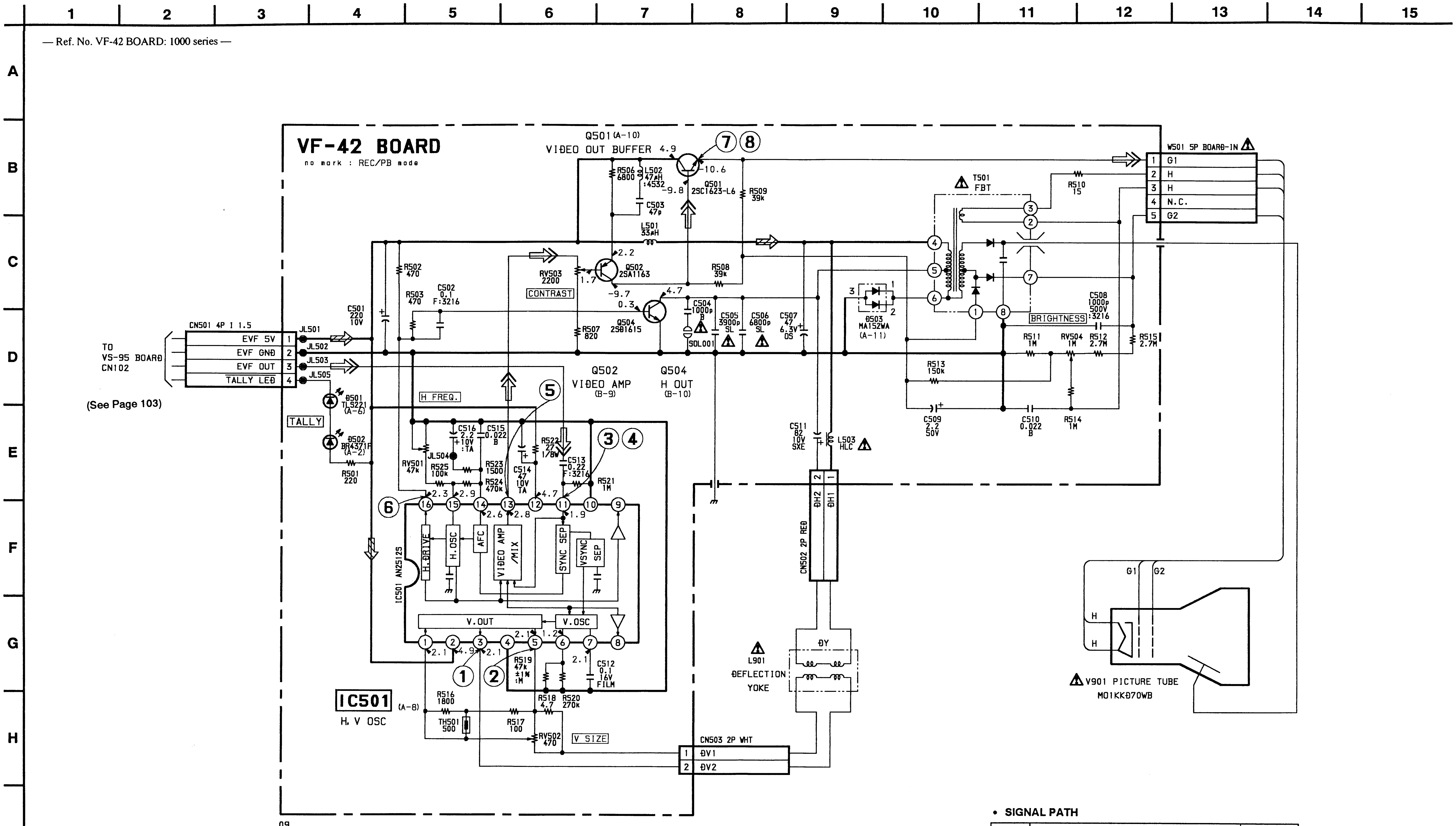
## VF-42 BOARD (COMPONENT SIDE)

## VF-42 BOARD (CONDUCTOR SIDE)


RV501
RV503
R507
R515
D501
C512
R520
TH501
R516
RV502
1-639-727-
21
A
B
C
D
E
F
CN503
R519
R518
R517
C514
CN501
4
1
R522
Q501
C501
D502
R501
➋
➊
8
5
1
9
12
16
IC501
➌,➍
➎
R502
R506
L502
C503
Q502
R508
Q504
C506
C505
C504
L501
T501
D503
R510
C509
R521
C513
C515
C516
R523
R524
R525
R503
➏
CN502
C502
C511
R509
C507
L503
R511
R513
RV504
R512
R514
C510
C508
W501
1-639-727-
21
TO
VF-42 BOARD
W501
G1
G2
H
H
V901
PICTURE
TUBE
HV
09
1
2
3
4
5
6
7

## VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-42 BOARD: 1000 series —


1
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6
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8
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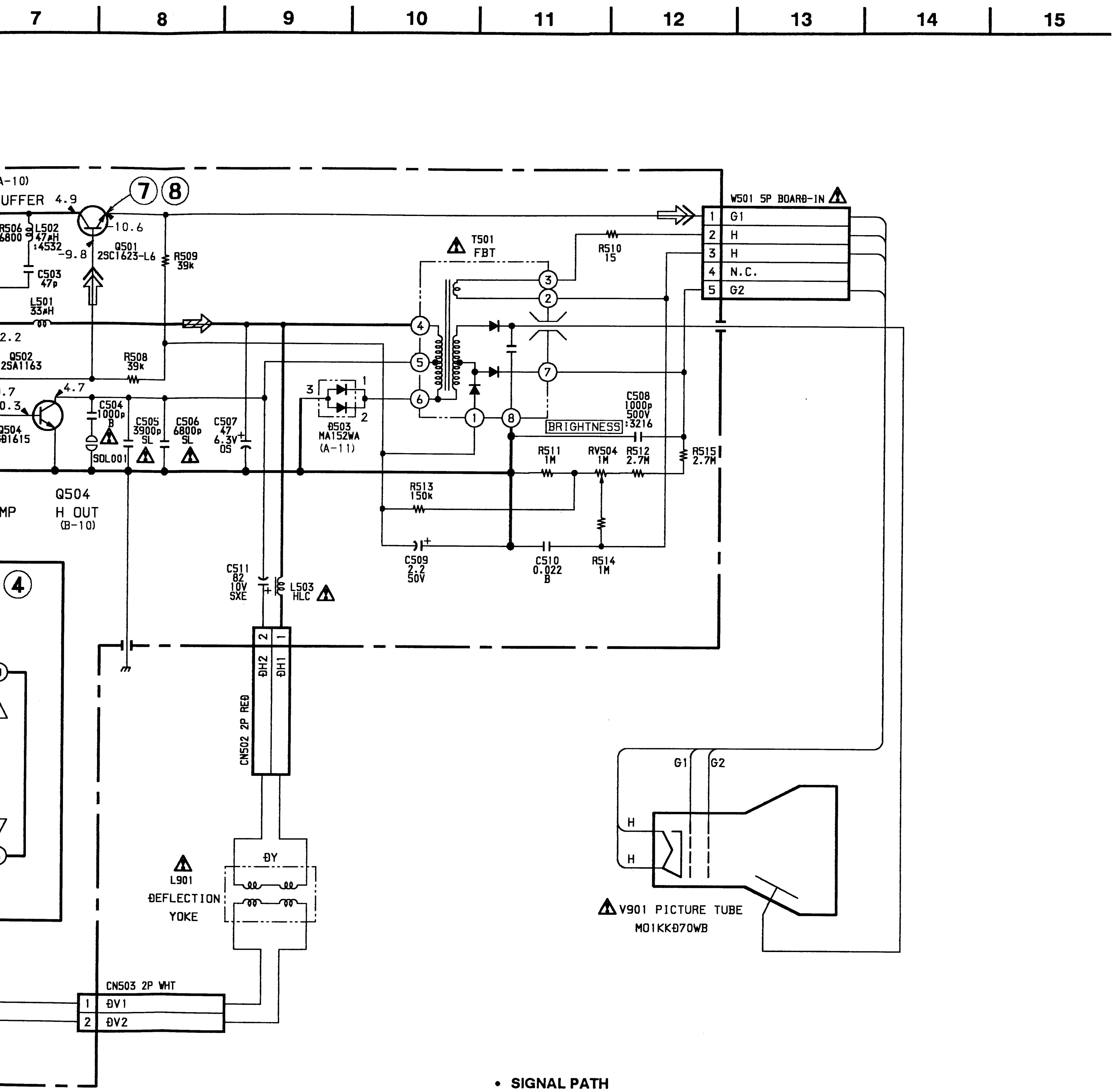
10
11
12
13
14
15
A
B
C
D
E
F
G
H
VF-42 BOARD
no mark : REC/PB mode
Q501 (A-10)
VIDEO OUT BUFFER
4.9
⑦⑧
10.6
-9.8
R506 6800
L502 47μH :4532
Q501 2SC1623-L6
R509 39k
C503 47p
L501 33μH
2.2
Q502 2SA1163
1.7
-9.7
RV503 2200
CONTRAST
R508 39k
4.7
0.3
Q504 2SD1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
R502 470
R503 470
C502 0.1 F:3216
C501 220 10V
R507 820
CN501 4P I 1.5
EVF 5V
EVF GND
EVF OUT
TALLY LED
TO VS-95 BOARD CN102
(See Page 103)
JL501
JL502
JL503
JL505
D501 TLS221 (A-6)
TALLY
D502 BR4371F (A-2)
R501 220
Q502 VIDEO AMP (B-9)
Q504 H OUT (B-10)
H FREQ.
⑤
C516 2.2 10V :TA
C515 0.022 B
JL504
RV501 47k
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R522 27 1/8W
C513 0.22 F:3216
③④
R521 1M
⑥
2.3
2.9
2.6
2.8
4.7
1.9
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
IC501 AN2512S
V.OUT
V.OSC
2.1
4.9
2.1
2.1
1.2
2.1
R519 47k ±1% :M
C512 0.1 16V FILM
①
②
IC501
H, V OSC
(A-8)
R516 1800
TH501 500
R517 100
RV502 470
V SIZE
R518 4.7
R520 270k
CN503 2P WHT
DV1
DV2
09
T501 FBT
R510 15
W501 5P BOARD-IN
G1
H
H
N.C.
G2
D503 MA152WA (A-11)
C508 1000p 500V :3216
BRIGHTNESS
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
C511 82 10V SXE
L503 HLC
CN502 2P RED
DH2
DH1
DY
L901 DEFLECTION YOKE
G1
G2
H
H
V901 PICTURE TUBE M01KKD70WB

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | |
| PB | | ⇨ | | |


7
8
9
10
11
12
13
14
15
(A-10)
BUFFER 4.9
⑦⑧
-10.6
-9.8
Q501
2SC1623-L6
R506 6800
L502 47μH :4532
C503 47p
R509 39k
L501 33μH
2.2
Q502 2SA1163
R508 39k
4.7
Q504 B1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SDL001
Q504
H OUT
(B-10)
T501 FBT
R510 15
W501 5P BOARD-IN
1 G1
2 H
3 H
4 N.C.
5 G2
D503 MA152WA (A-11)
BRIGHTNESS
C508 1000p 500V :3216
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
C511 82 10V SXE
L503 HLC
CN502 2P RED
DH2
DH1
DY
L901
DEFLECTION
YOKE
CN503 2P WHT
1 DV1
2 DV2
G1
G2
H
H
V901 PICTURE TUBE
M01KKD70WB
④

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | |
| PB | | ⇨ | | |

## DD-48 (POWER), SW-205 (CAMERA FUNCTION SWITCH) PRINTED WIRING BOARDS

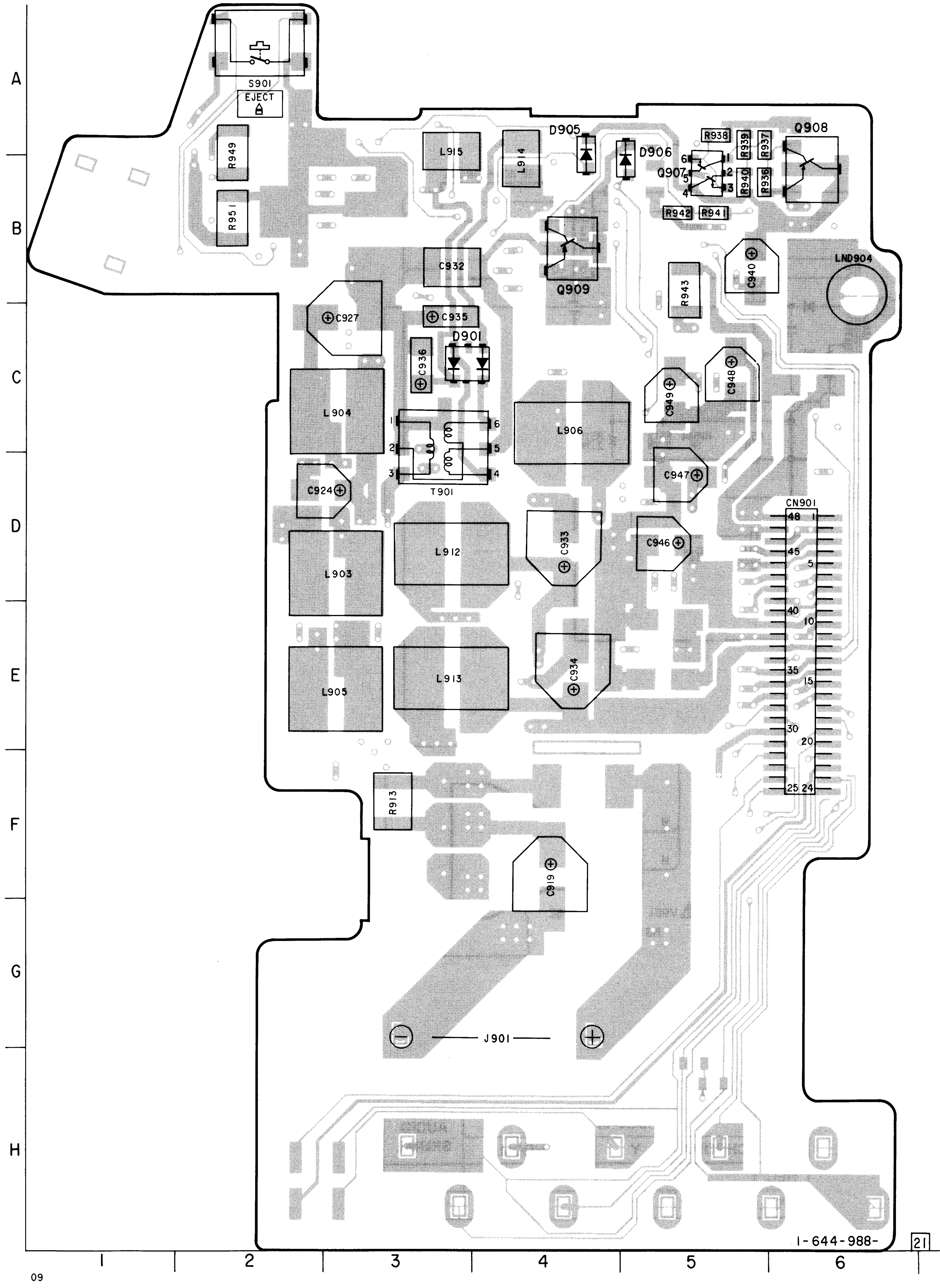
— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —

- **For printed wiring boards.**
- **DD-48** board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

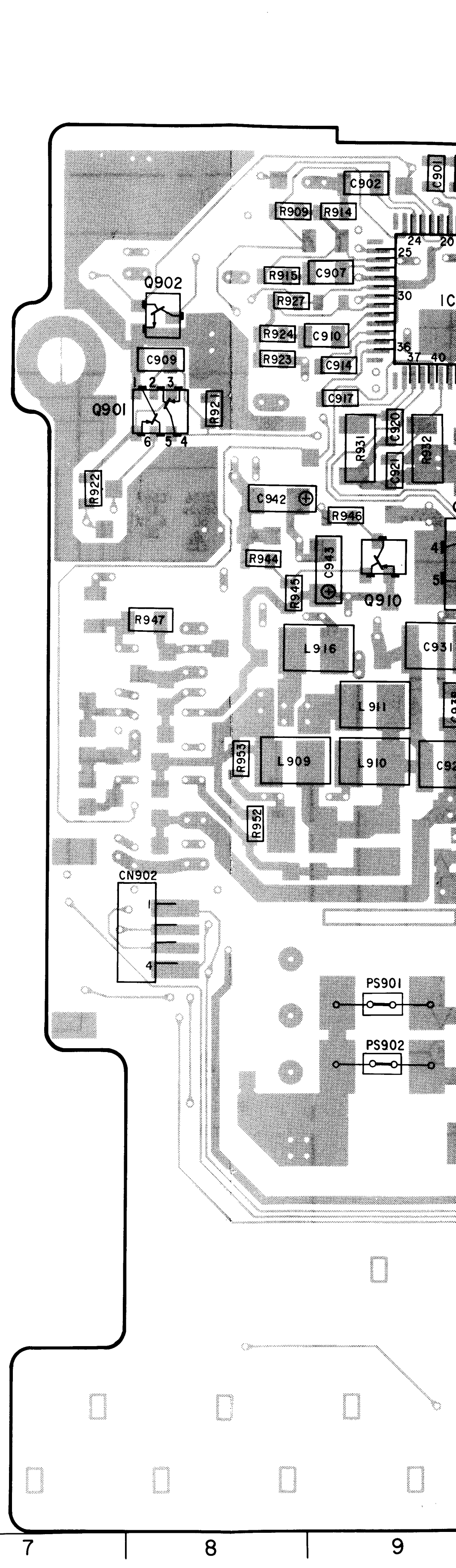
| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

| | | |
|---|---|---|
| | | 〈 DIODE 〉 |
| D901 | 8-719-981-59 | DIODE FC805 |
| D905 | 8-719-404-46 | DIODE MA110 |
| D906 | 8-719-404-46 | DIODE MA110 |
| | | 〈 IC 〉 |
| IC901 | 8-759-060-94 | IC MB3785APFV-G-BND-ER |
| | | 〈 TRANSISTOR 〉 |
| Q901 | 8-729-403-27 | TRANSISTOR XN4401 |
| Q902 | 8-729-402-42 | TRANSISTOR UN5213 |
| Q903 | 8-729-823-84 | TRANSISTOR FP102 |
| Q904 | 8-729-804-41 | TRANSISTOR 2SB1122-S |
| Q905 | 8-729-823-82 | TRANSISTOR FP101 |
| Q906 | 8-729-823-82 | TRANSISTOR FP101 |
| Q907 | 8-729-402-81 | TRANSISTOR XN4501 |
| Q908 | 8-729-805-25 | TRANSISTOR 2SB1121 |
| Q909 | 8-729-805-25 | TRANSISTOR 2SB1121 |
| Q910 | 8-729-014-20 | TRANSISTOR RN2304 |

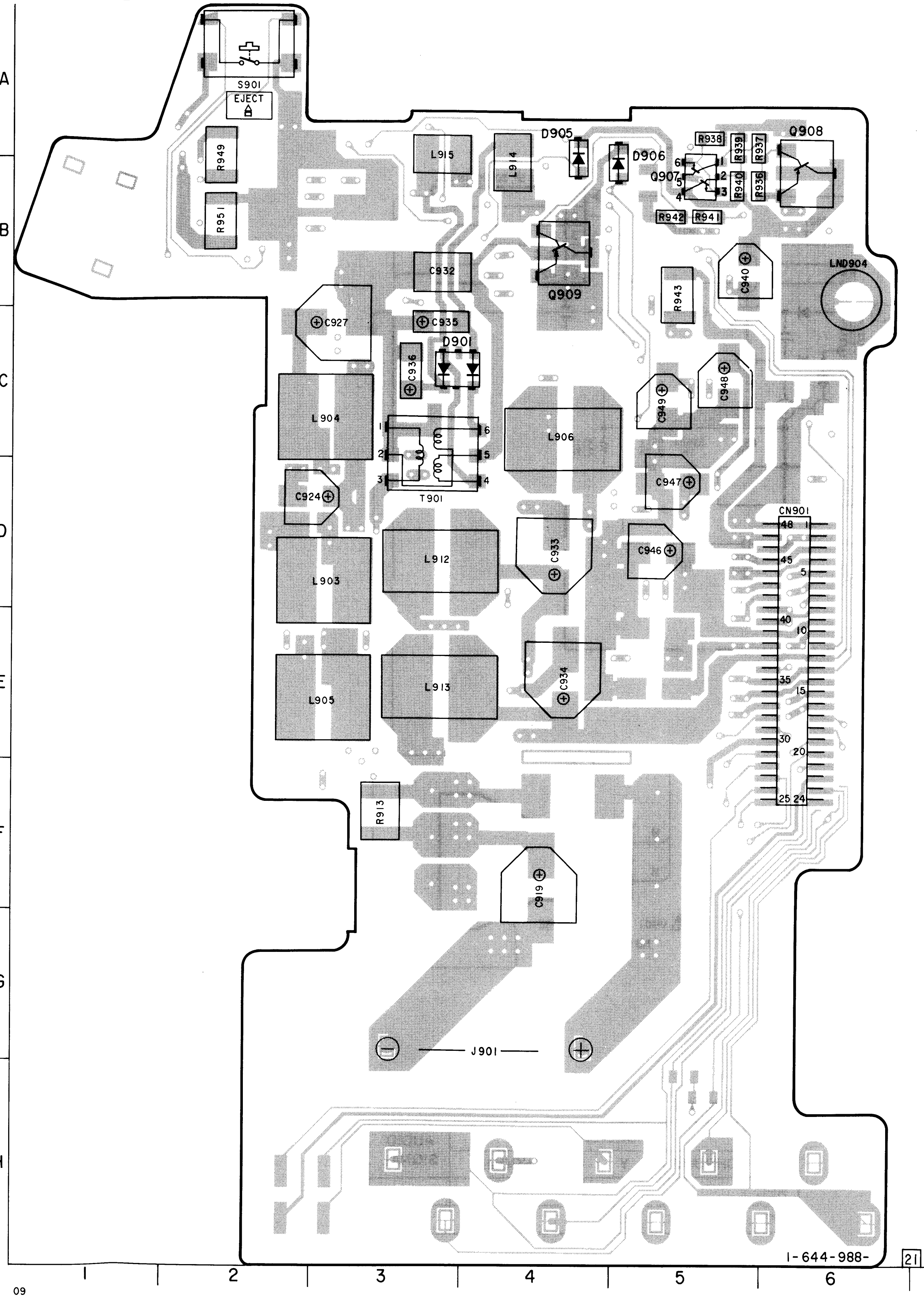
**DD-48** BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
S901
EJECT
R949
R951
L915
L914
D905
D906
R938
R939
R937
Q908
Q907
R940
R936
R942
R941
C932
Q909
R943
C940
LND904
C927
C935
D901
C936
L904
T901
L906
C949
C948
C947
C924
CN901
L912
C933
C946
L903
L913
C934
L905
R913
C919
J901
1-644-988-
21
1
2
3
4
5
6
09

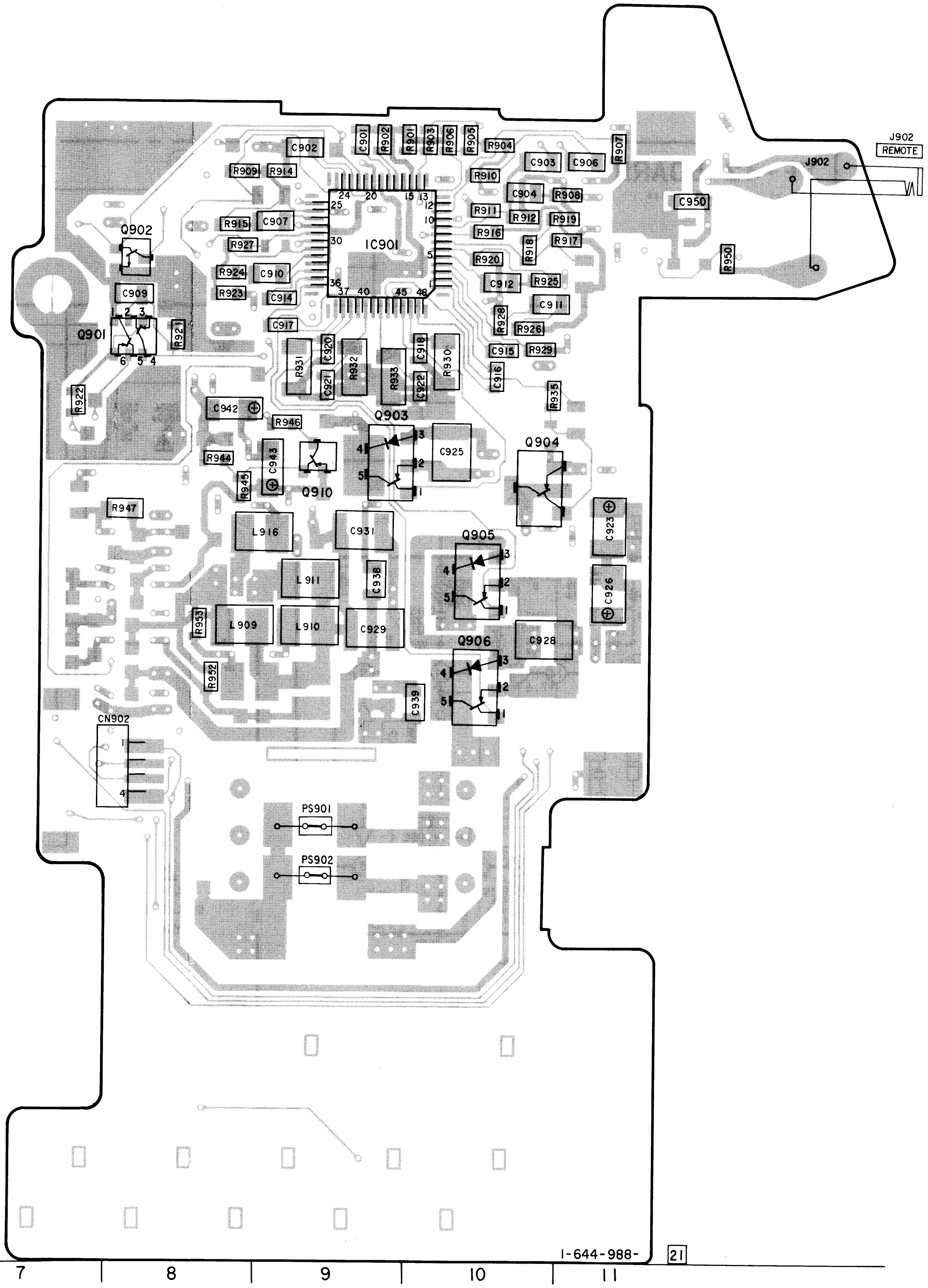
**DD-48** BOARD(CONDUCTOR SIDE)


C902
R909
R914
Q902
R915
C907
R927
R924
C910
R923
C914
C909
C917
Q901
R921
R931
C920
R922
C942
R946
R944
C943
R945
Q910
R947
L916
C931
L911
L909
L910
R953
R952
CN902
PS901
PS902
IC
7
8
9

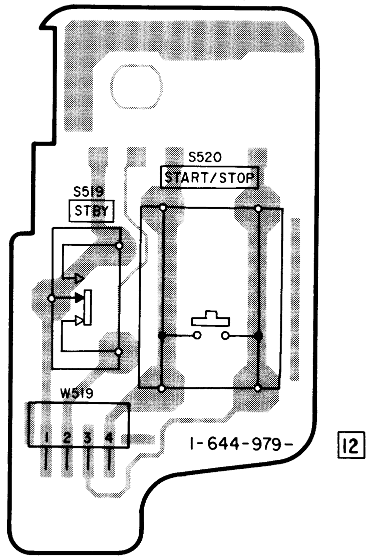
## **DD-48** BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
S901
EJECT
R949
R951
L915
L914
D905
D906
Q907
R938
R939
R937
R940
R936
Q908
R942
R941
Q909
C932
R943
C940
LND904
C927
C935
D901
C936
C949
C948
L904
T901
L906
C947
C924
CN901
48
1
45
5
40
10
35
15
30
20
25
24
C946
C933
L912
L903
L905
L913
C934
R913
C919
J901
1-644-988-
21
1
2
3
4
5
6

## **DD-48** BOARD(CONDUCTOR SIDE)


J902
REMOTE
C902
C901
R902
R901
R903
R906
R905
R904
C903
C906
R907
R909
R914
R910
C904
R908
C950
R911
R912
R919
R916
R918
R917
R950
R915
C907
IC901
R927
R920
R924
C910
C912
R925
R923
C914
C911
Q902
C909
C917
R928
R926
Q901
R921
R931
C920
R932
C918
R930
C915
R929
C921
R933
C922
C916
R922
R935
C942
R946
Q903
C925
Q904
R944
C943
R945
Q910
R947
L916
C931
C923
Q905
L911
C938
C926
R953
L909
L910
C929
C928
Q906
R952
C939
CN902
PS901
PS902
1-644-988-
21
7
8
9
10
11

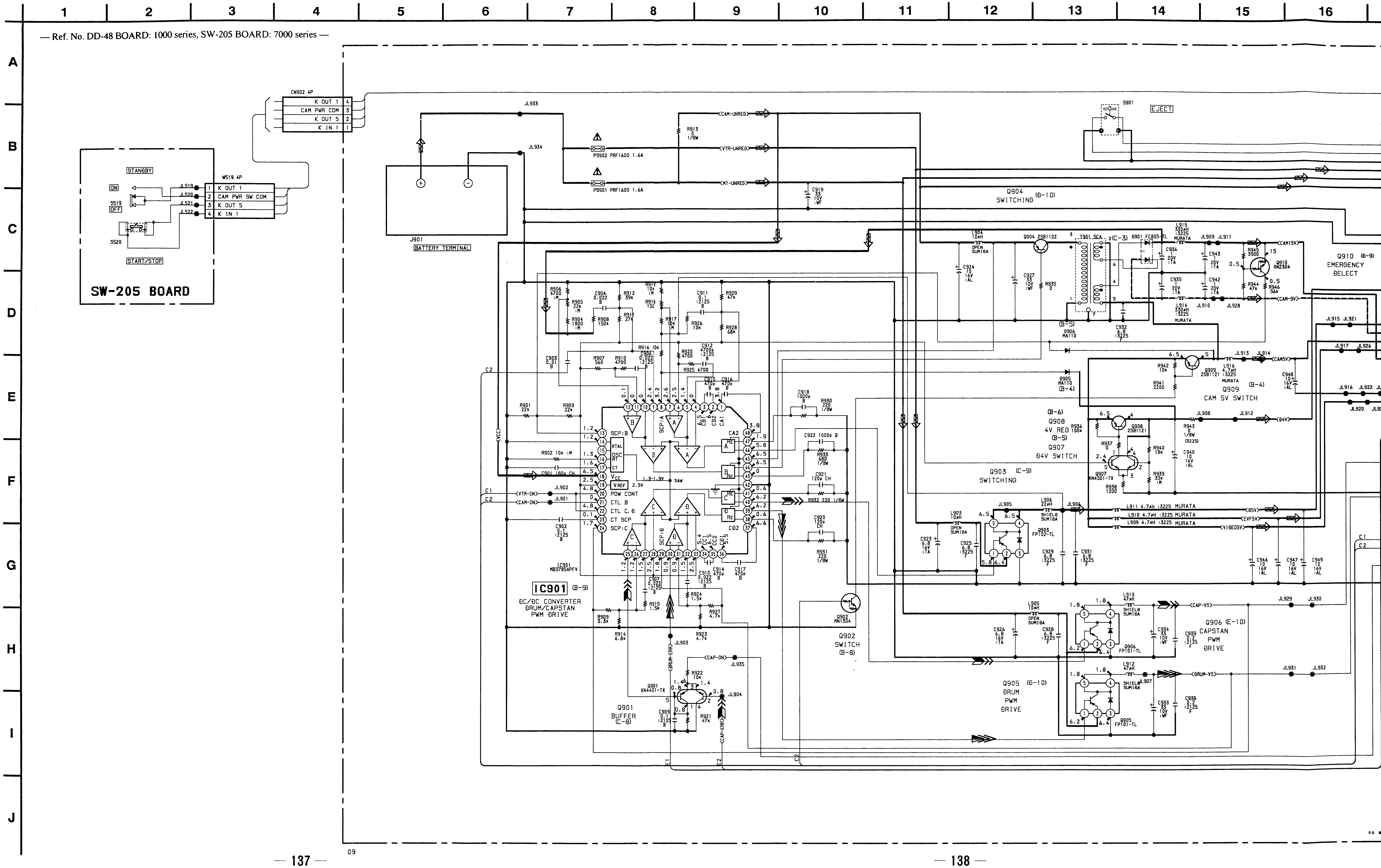
## **SW-205** BOARD
(CONDUCTOR SIDE)


S520
START/STOP
S519
STBY
W519
1
2
3
4
1-644-979-
12

**POWER** **POWER**

## DD-48 (POWOR), SW-205 (CAMERA FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. DD-48 BOARD: 1000 series, SW-205 BOARD: 7000 series —


1
2
3
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7
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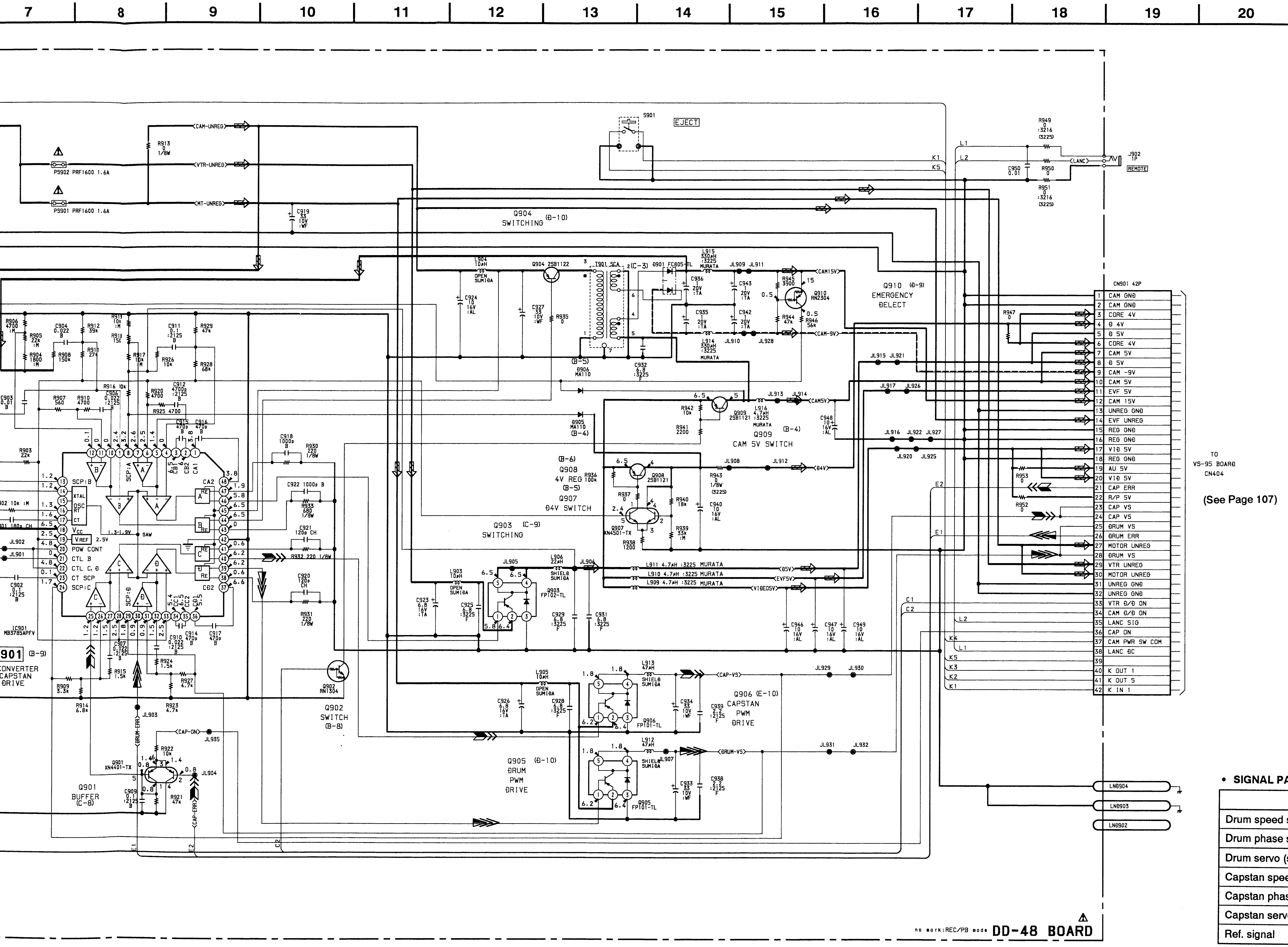
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
SW-205 BOARD
STANDBY
ON
S519
OFF
S520
START/STOP
W519 4P
K OUT 1
CAM PWR SW COM
K OUT 5
K IN 1
CN902 4P
CAM PWR COM
J901
BATTERY TERMINAL
JL933
JL934
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
CAM-UNREG
VTR-UNREG
MT-UNREG
R913
Q904 SWITCHING (D-10)
T901 SCA
S901
EJECT
Q910 (D-9) EMERGENCY EJECT
Q909 CAM 5V SWITCH (B-4)
Q908 4V REG (B-6)
Q907 D4V SWITCH (B-5)
Q903 SWITCHING (C-9)
IC901 (B-9)
DC/DC CONVERTER
DRUM/CAPSTAN
PWM DRIVE
IC901 MB3785APFV
SCP:B
XTAL
OSC
VREF
POW CONT
CTL B
CTL C.D
CT SCP
SCP:C
VTR-ON
CAM-ON
CAM15V
CAM-9V
CAM5V
B4V
B5V
EVF5V
VIDEO5V
CAP-VS
DRUM-VS
CAP-ON
DRUM-ERR
CAP-ERR
L911 4.7μH :3225 MURATA
L910 4.7μH :3225 MURATA
L909 4.7μH :3225 MURATA
Q906 (E-10) CAPSTAN PWM DRIVE
Q905 (D-10) DRUM PWM DRIVE
Q902 SWITCH (B-8)
Q901 BUFFER (C-8)
C1
C2
E1
E2
09

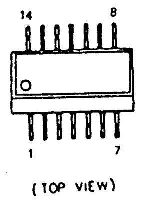

7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
S901
EJECT
J902
LANC
REMOTE
PS902 PRF1600 1.6A
PS901 PRF1600 1.6A
CAM-UNREG
VTR-UNREG
MT-UNREG
Q904 (D-10)
SWITCHING
Q910 (D-9)
EMERGENCY
EJECT
T901
Q901 FC805-TL
Q904 2SB1122
CAM15V
CAM-9V
Q909 (B-4)
CAM 5V SWITCH
CAM5V
(B-6)
Q908
4V REG
(B-5)
Q907
Ð4V SWITCH
Ð4V
Q903 (C-9)
SWITCHING
Ð5V
EVF5V
VIDEO5V
Q902
SWITCH
(B-8)
IC901 MB3785APFV
IC901 (B-9)
CONVERTER
CAPSTAN
DRIVE
Q901
BUFFER
(C-8)
CAP-ON
CAP-VS
DRUM-VS
DRUM-ERR
CAP-ERR
Q906 (E-10)
CAPSTAN
PWM
DRIVE
Q905 (D-10)
DRUM
PWM
DRIVE
CN901 42P
1 CAM GND
2 CAM GND
3 CORE 4V
4 Ð 4V
5 Ð 5V
6 CORE 4V
7 CAM 5V
8 Ð 5V
9 CAM -9V
10 CAM 5V
11 EVF 5V
12 CAM 15V
13 UNREG GND
14 EVF UNREG
15 REG GND
16 REG GND
17 VIÐ 5V
18 REG GND
19 AU 5V
20 VIÐ 5V
21 CAP ERR
22 R/P 5V
23 CAP VS
24 CAP VS
25 DRUM VS
26 DRUM ERR
27 MOTOR UNREG
28 DRUM VS
29 VTR UNREG
30 MOTOR UNREG
31 UNREG GND
32 UNREG GND
33 VTR Ð/D ON
34 CAM Ð/D ON
35 LANC SIG
36 CAP ON
37 CAM PWR SW COM
38 LANC DC
39
40 K OUT 1
41 K OUT 5
42 K IN 1
TO
VS-95 BOARD
CN404
(See Page 107)
LND904
LND903
LND902
no mark:REC/PB mode
DD-48 BOARD

- **SIGNAL PATH**

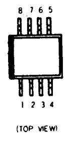
| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | | |
| Drum phase servo | | | |
| Drum servo (speed and phase) | | ⋙ | |
| Capstan servo speed servo | | | |
| Capstan phase servo | | | |
| Capstan servo (speed and phase) | | ⊃⟫ | |
| Ref. signal | | | |

## 4-3. SEMICONDUCTORS

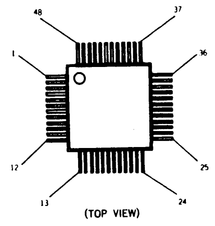
**AN2512S**


14
8
1
7
(TOP VIEW)

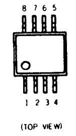
**BR9021AF**
**LM358DR**


8 7 6 5
1 2 3 4
(TOP VIEW)

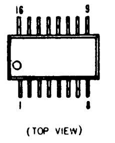
**CXA1202R**
**CXA1208R**
**CXA1481AR**
**CXA1488R**


48
37
1
36
12
25
13
24
(TOP VIEW)

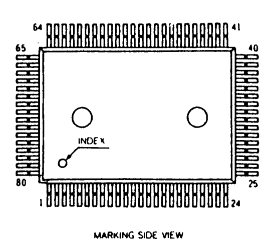
**CXA1211M**
**NJM2234M**
**NJM3414M**


8 7 6 5
1 2 3 4
(TOP VIEW)

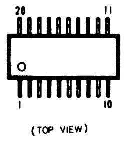
**CXA1452N**
**CXL1506M**


16
9
1
8
(TOP VIEW)

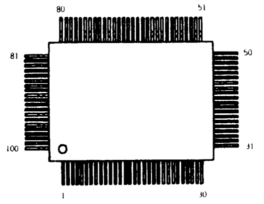
**CXD2100Q**
**µPD75316GF**


64
41
65
40
INDEX
80
25
1
24
MARKING SIDE VIEW

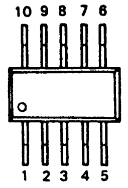
**CXD1250AN**
**CXD2104BN**
**M62353GP**
**MB88346BPFV**
**MPC1720VM**
**MPC1724VMEL**
**µPD7564G-540**


20
11
1
10
(TOP VIEW)

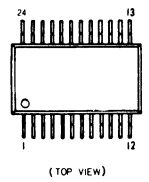
**CXP80624-428R/434R**


80
51
81
50
100
31
1
30

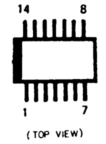
**LB1830M**


10 9 8 7 6
1 2 3 4 5

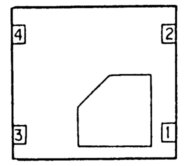
**LB8111V**


24
13
1
12
(TOP VIEW)

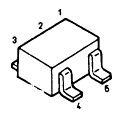
**LM324DR**


14
8
1
7
(TOP VIEW)

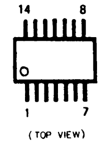
**RS-20E-T**



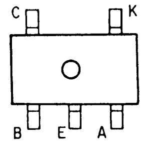
**TC7SU04F**



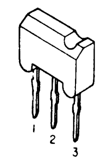
**TL1596CDB**


14
8
1
7
(TOP VIEW)

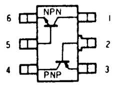
**FP101**
**FP102**



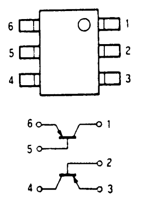
**XN4213**
**UMZ1**



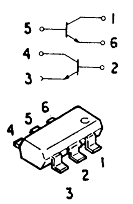
**XN4312**


6
5
4
1
2
3
NPN
PNP

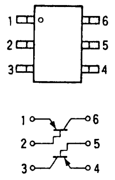
**XN4401**
**UMT1**



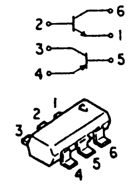
**XN4501**
**UMX1**



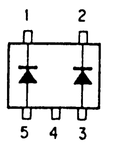
**XP4401**



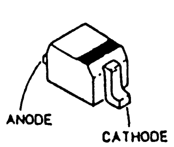
**XP4601**



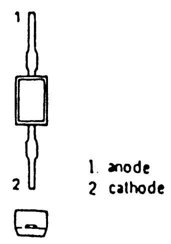
**FC805**



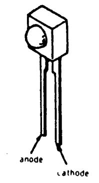
**MA110**


ANODE
CATHODE

**TLS221**


1
2
1. anode
2. cathode

**BR4371F**

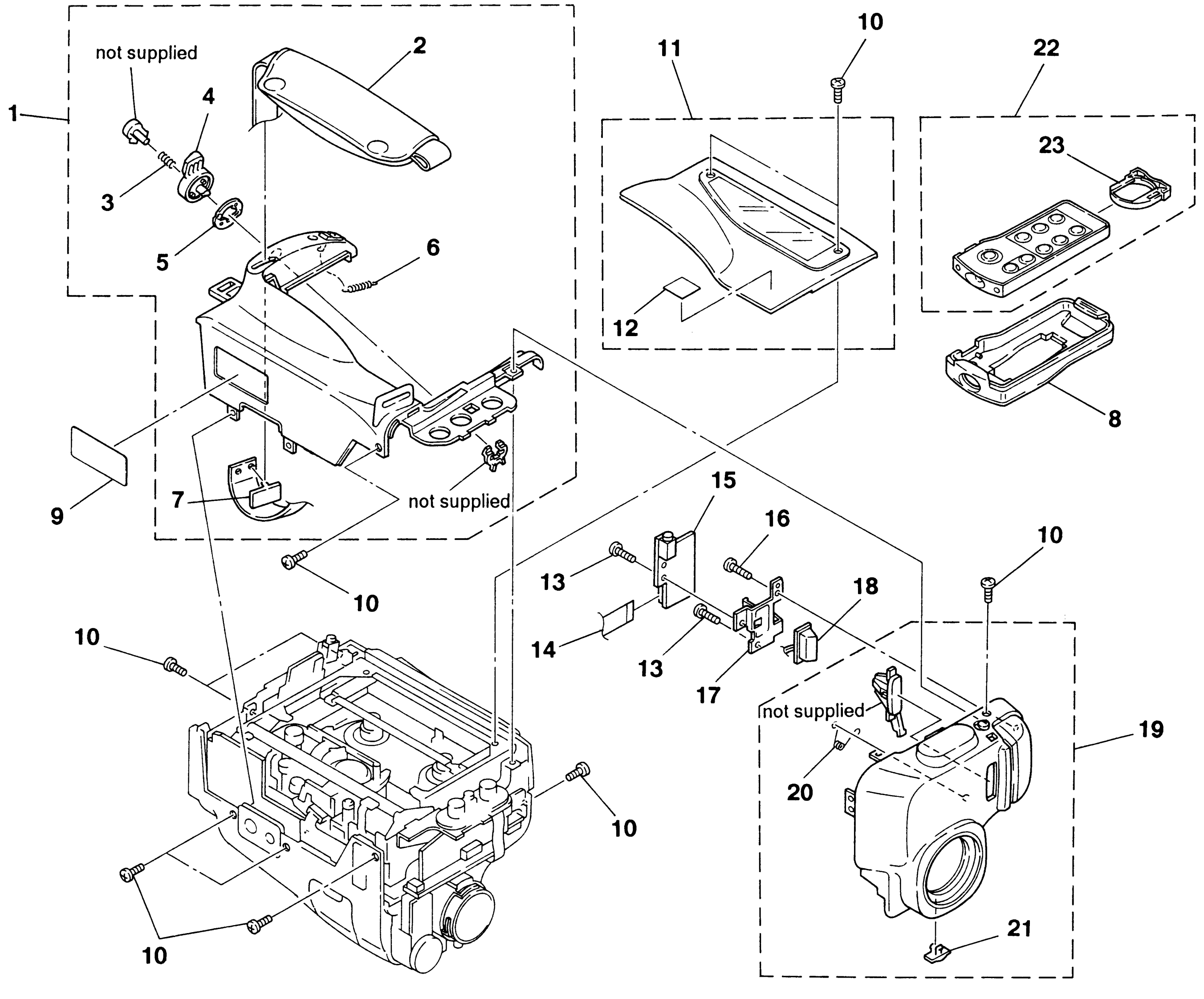

anode
cathode

# SECTION 5
# EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ✱ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

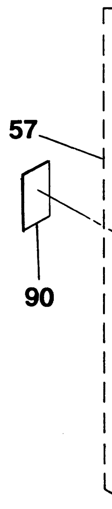
## 5-1. CABINET (L) AND F PANEL ASSEMBLIES


1
not supplied
2
4
3
5
6
7
9
not supplied
10
11
12
22
23
8
15
16
13
14
18
17
10
19
not supplied
20
21

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3942-282-1 | CABINET (L) ASSY | |
| 2 | 3-736-807-01 | BELT, GRIP | |
| 3 | 3-578-221-00 | SPRING, COMPRESSION | |
| 4 | 3-942-985-01 | KNOB, STAND-BY | |
| 5 | 3-736-364-01 | SPRING | |
| 6 | 4-602-490-00 | SPRING, TENSION | |
| 7 | 3-942-895-01 | STOPPER, BELT | |
| 8 | 3-943-154-11 | HOLDER (B), REMOTE CONTROL | |
| * 9 | 3-949-861-01 | LABEL, MODEL NUMBER (AEP) | |
| * 9 | 3-950-354-01 | LABEL, MODEL NUMBER (UK, E, Australian) | |
| 10 | 3-719-381-01 | SCREW (M2X4) | |
| 11 | X-3942-139-1 | LID ASSY, CASSETTE | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 12 | 3-703-713-41 | STICKER, SONY SYMBOL (10) | |
| 13 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 14 | 1-696-487-11 | CABLE, FLAT (FFC-90) | |
| 15 | A-7063-322-A | MA-149P BOARD, COMPLETE | |
| 16 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| * 17 | 3-949-000-01 | RETAINER, MICROPHONE | |
| 18 | A-7091-800-A | MICROPHONE UNIT | |
| 19 | X-3941-891-2 | PANEL ASSY, F | |
| 20 | 3-947-357-01 | SPRING, TORSION | |
| 21 | 3-945-269-01 | KNOB, S | |
| 22 | 1-465-927-81 | REMOTE COMMANDER (CAM CORDER) (RMT-507) | |
| 23 | 3-708-412-01 | LID, REMOTE COMMANDER | |

## 5-2. CAB



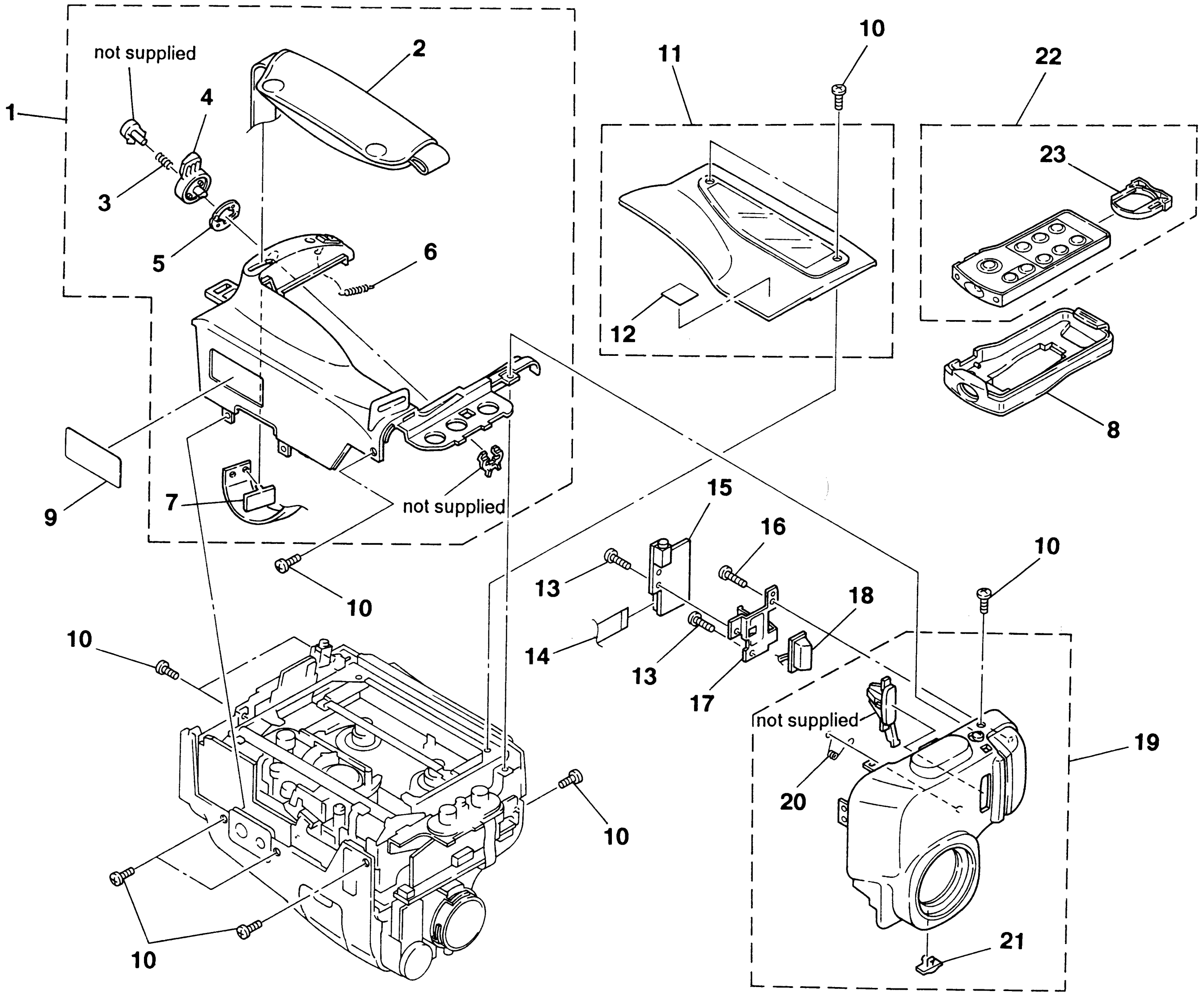
| Ref. No. | Part |
|---|---|
| 51 | A-70 |
| 52 | A-70 |
| 53 | A-70 |
| 54 | A-70 |
| 55 | 3-71 |
| 56 | 3-74 |
| 57 | X-39 |
| 58 | 3-94 |
| 59 | 3-94 |
| 60 | 3-42 |
| 61 | 3-94 |
| 62 | 3-30 |
| 63 | 3-94 |
| 64 | 3-94 |
| 65 | 3-94 |
| 66 | 3-94 |
| 67 | 3-74 |
| 68 | 3-74 |
| 69 | 3-74 |
| 70 | 3-71 |
| 71 | 3-94 |
| * 72 | 3-94 |
| 73 | 3-74 |
| 74 | 3-74 |

# SECTION 5
# EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

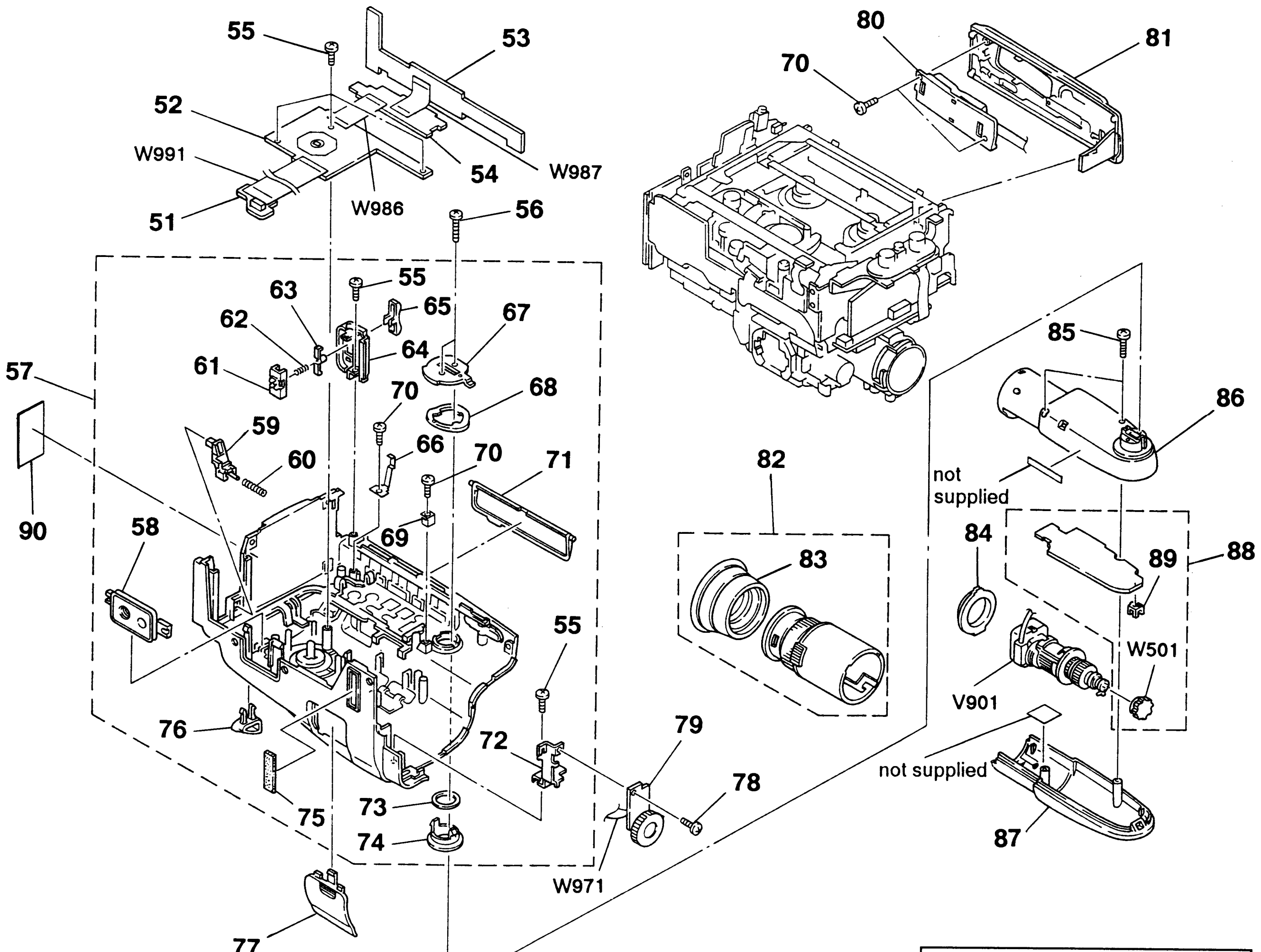
## 5-1. CABINET (L) AND F PANEL ASSEMBLIES



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3942-282-1 | CABINET (L) ASSY | |
| 2 | 3-736-807-01 | BELT, GRIP | |
| 3 | 3-578-221-00 | SPRING, COMPRESSION | |
| 4 | 3-942-985-01 | KNOB, STAND-BY | |
| 5 | 3-736-364-01 | SPRING | |
| 6 | 4-602-490-00 | SPRING, TENSION | |
| 7 | 3-942-895-01 | STOPPER, BELT | |
| 8 | 3-943-154-11 | HOLDER (B), REMOTE CONTROL | |
| * 9 | 3-949-861-01 | LABEL, MODEL NUMBER (AEP) | |
| * 9 | 3-950-354-01 | LABEL, MODEL NUMBER (UK, E, Australian) | |
| 10 | 3-719-381-01 | SCREW (M2X4) | |
| 11 | X-3942-139-1 | LID ASSY, CASSETTE | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 12 | 3-703-713-41 | STICKER, SONY SYMBOL (10) | |
| 13 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 14 | 1-696-487-11 | CABLE, FLAT (FFC-90) | |
| 15 | A-7063-322-A | MA-149P BOARD, COMPLETE | |
| 16 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| * 17 | 3-949-000-01 | RETAINER, MICROPHONE | |
| 18 | A-7091-800-A | MICROPHONE UNIT | |
| 19 | X-3941-891-2 | PANEL ASSY, F | |
| 20 | 3-947-357-01 | SPRING, TORSION | |
| 21 | 3-945-269-01 | KNOB, S | |
| 22 | 1-465-927-81 | REMOTE COMMANDER (CAM CORDER) (RMT-507) | |
| 23 | 3-708-412-01 | LID, REMOTE COMMANDER | |

## 5-2. CABINET (R) AND EVF ASSEMBLIES

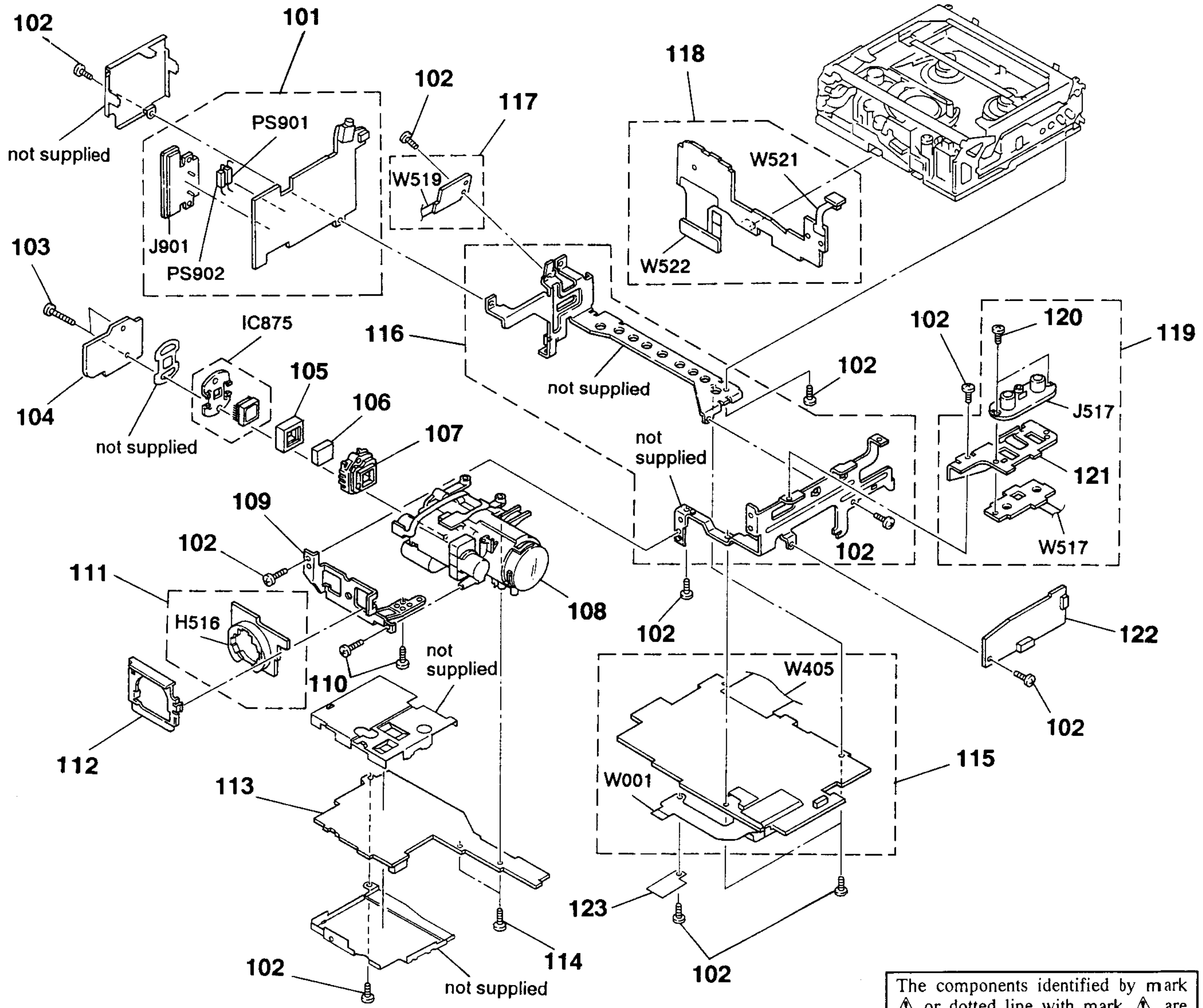


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | A-7071-694-A | CN-65P BOARD, COMPLETE | |
| 52 | A-7071-655-A | CF-32 BOARD, COMPLETE | |
| 53 | A-7071-653-A | VK-27 BOARD, COMPLETE | |
| 54 | A-7071-654-A | ED-35 BOARD, COMPLETE | |
| 55 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 56 | 3-740-546-41 | SCREW (M2X10) | |
| 57 | X-3942-156-3 | CABINET (R) ASSY | |
| 58 | 3-942-911-01 | SCREW, TRIPOD | |
| 59 | 3-948-990-01 | LOCK, BATTERY | |
| 60 | 3-426-508-00 | SPRING, COMPRESSION | |
| 61 | 3-948-839-01 | BLIND, POWER | |
| 62 | 3-303-973-00 | SPRING, COMPRESSION | |
| 63 | 3-946-186-01 | PUSH BUTTON, POWER | |
| 64 | 3-948-975-01 | POWER (BASE) | |
| 65 | 3-946-248-01 | BUTTON, POWER | |
| 66 | 3-948-988-01 | SPRING, LEAF, VK | |
| 67 | 3-747-111-01 | PLATE, LOCK, TILT | |
| 68 | 3-747-110-01 | SPRING, LEAF, TILT | |
| 69 | 3-747-178-01 | REINFORCEMENT, TILT LOCK | |
| 70 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 71 | 3-948-976-01 | DOOR, CONTROL | |
| * 72 | 3-948-987-01 | FRAME, MF | |
| 73 | 3-747-112-01 | RING, TILT | |
| 74 | 3-747-109-01 | SLEEVE, EVF | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 75 | 3-949-008-01 | SHEET, FOOT | |
| 76 | 3-948-989-01 | KNOB, BATTERY | |
| 77 | 3-948-843-01 | LID, BATTERY CASE, LITHIUM | |
| 78 | 3-713-786-51 | SCREW (M2X3) | |
| 79 | A-7071-656-A | MF-191 BOARD, COMPLETE | |
| 80 | 1-692-257-11 | SWITCH, PUSH (ZOOM) | |
| 81 | X-3941-894-1 | LID ASSY, LS | |
| 82 | X-3941-603-1 | HOLDER ASSY, FINDER | |
| 83 | 3-946-426-01 | EYE CUP | |
| 84 | 3-747-116-01 | COVER, CRT | |
| 85 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 | |
| 86 | X-3940-706-1 | CABINET (L) ASSY, EVF | |
| 87 | 3-943-077-01 | CABINET (R), EVF | |
| 88 | A-7063-220-A | VF-42P BOARD, COMPLETE | |
| 89 | 3-942-888-01 | HOLDER, LED | |
| * 90 | 3-704-235-01 | LABEL, CAUTION (UK) | |
| V901 | 1-452-565-11 | CRT ASSY | |
| ⚠W501 | 1-540-019-21 | SOCKET ASSY, CRT | |
| W971 | 1-696-484-11 | CABLE, FLAT (FFC-87) | |
| W986 | 1-696-621-11 | FP-590 FLEXIBLE BOARD | |
| W987 | 1-696-622-11 | FP-591 FLEXIBLE BOARD | |
| W991 | 1-696-483-11 | CABLE, FLAT (FFC-86) | |

## 5-3. MAIN BOARDS ASSEMBLY


102
101
not supplied
PS901
J901
PS902
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W519
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W521
W522
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IC875
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107
104
not supplied
not supplied
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J517
121
W517
not
supplied
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111
H516
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122
not
supplied
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W405
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113
W001
115
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123
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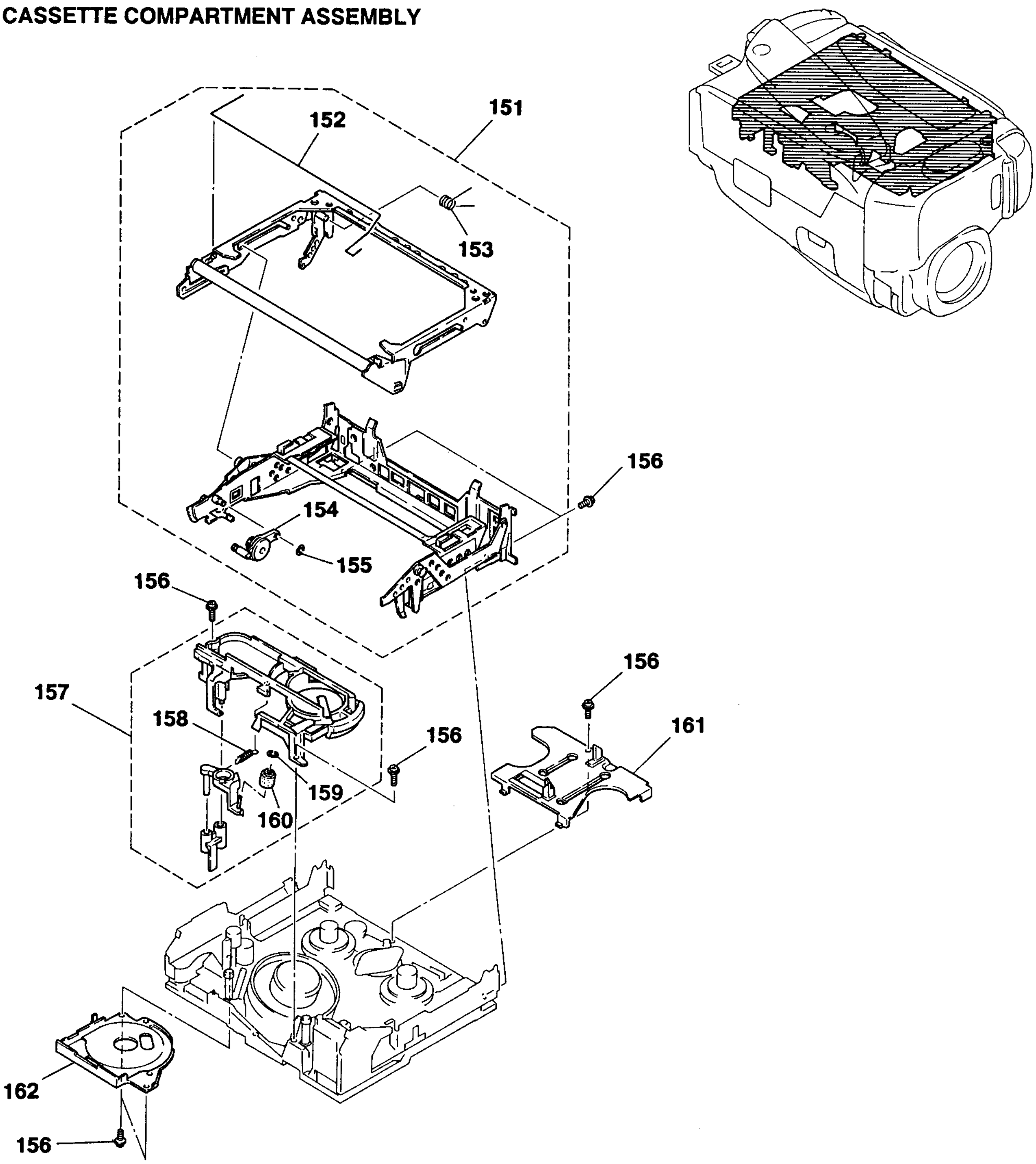
114
not supplied
102

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠101 | A-7063-320-A | DD-48P BOARD, COMPLETE | |
| 102 | 3-713-786-51 | SCREW (M2X3) | |
| 103 | 3-947-268-01 | SCREW (B TIGHT) (2), TAPPING | |
| 104 | A-7063-318-A | CD-92P BOARD, COMPLETE | |
| 105 | 3-946-857-01 | RUBBER (S), SEAL | |
| 106 | 1-547-558-21 | FILTER BLOCK, OPTICAL | |
| 107 | 3-946-856-01 | ADAPTOR (H), CCD FITTING | |
| 108 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| * 109 | 3-949-001-01 | FRAME, LENS | |
| 110 | 3-713-790-21 | SCREW (M2X6), TAPPING, P3 | |
| 111 | A-7071-652-A | LI-44 BOARD, COMPLETE | |
| 112 | 3-948-842-01 | HOLDER, LI | |
| 113 | A-7063-317-A | VC-122P BOARD, COMPLETE | |
| 114 | 3-719-601-01 | SCREW (B2X5), TAPPING | |
| 115 | A-7063-316-A | VS-95P BOARD, COMPLETE | |
| * 116 | X-3942-209-1 | FRAME (UPPER LOWER) ASSY | |
| 117 | A-7071-651-A | SW-205 BOARD, COMPLETE | |
| 118 | A-7063-319-A | SL-27P BOARD, COMPLETE | |
| 119 | A-7063-266-A | JK-91 BOARD, COMPLETE | |
| 120 | 3-719-381-01 | SCREW (M2X4) | |
| * 121 | 3-948-974-01 | FRAME (M), JACK | |
| 122 | A-7063-321-A | AU-138P BOARD, COMPLETE | |
| 123 | 3-951-136-02 | SHIELD, DRUM | |
| H516 | 1-550-104-32 | HOLDER, BATTERY | |
| J517 | 1-537-142-21 | TERMINAL BOARD | |
| J901 | 1-537-281-41 | TERMINAL BOARD | |
| IC875 | A-7030-369-A | CCD BLOCK ASSY (AUTO) (ICX055AK-2) (CCD IMAGER) | |
| ⚠PS901 | 1-532-841-21 | LINK, IC 1.6A/90V | |
| ⚠PS902 | 1-532-841-21 | LINK, IC 1.6A/90V | |
| W001 | 1-696-489-11 | FP-588 FLEXIBLE BOARD | |
| W405 | 1-644-285-11 | FP-572 FLEXIBLE BOARD | |
| W517 | 1-696-482-11 | CABLE, FLAT (FFC-85) | |
| W519 | 1-696-488-11 | CABLE, FLAT (FFC-92) | |
| W521 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | |
| W522 | 1-696-490-11 | FP-589 FLEXIBLE BOARD | |

## 5-4. CASSETTE COMPARTMENT ASSEMBLY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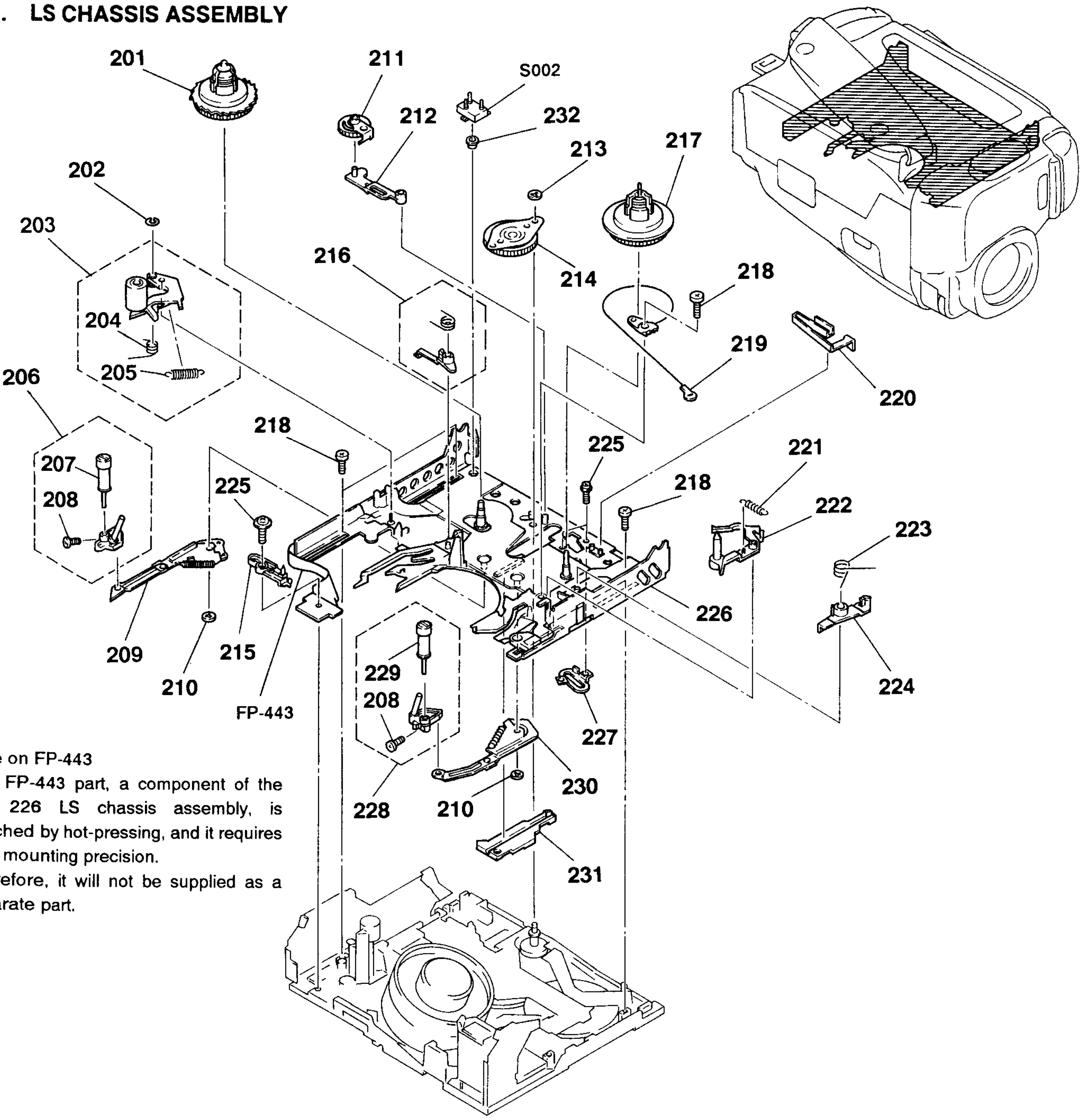
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | A-7040-312-A | CASSETTE COMPARTMENT BLOCK ASSY | |
| 152 | 3-945-773-01 | BAR, TORSION | |
| 153 | 3-945-771-01 | SPRING, TORSION | |
| 154 | X-3941-287-2 | DAMPER ASSY | |
| 155 | 3-315-384-31 | WASHER, STOPPER | |
| 156 | 3-947-503-01 | SCREW (M1.4X2.5) | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 157 | A-7040-309-A | PROTECT (BASE) BLOCK ASSY | |
| 158 | 3-945-760-01 | SPRING, TENSION | |
| 159 | 3-321-393-01 | WASHER, STOPPER | |
| 160 | X-3726-817-3 | ROLLER ASSY, HC | |
| 161 | X-3941-280-1 | RETAINER ASSY, GOOSENECK | |
| 162 | 3-945-733-01 | COVER, CAPSTAN | |

## 5-5. LS CHASSIS ASSEMBLY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S002
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FP-443
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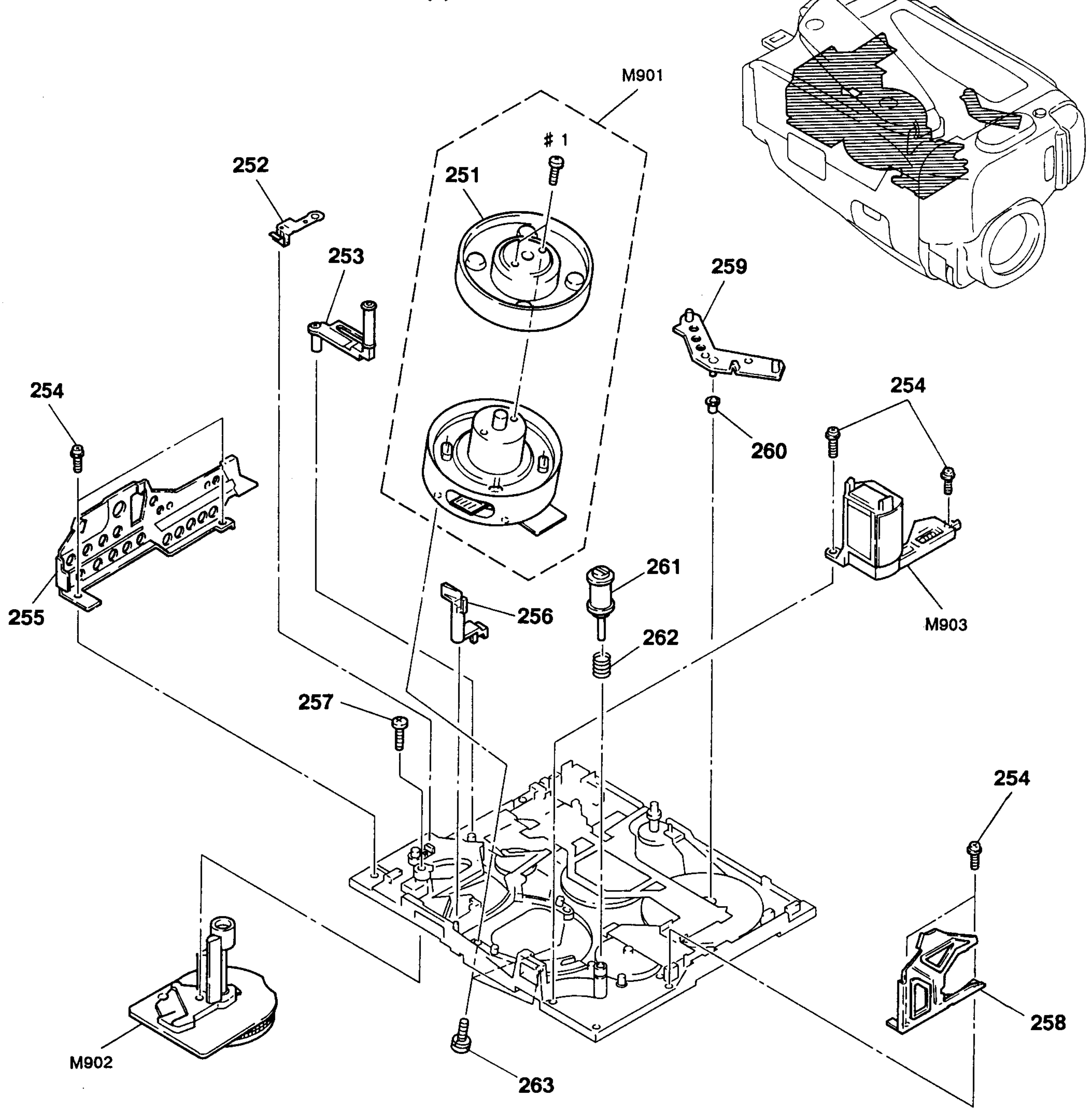
Note on FP-443
The FP-443 part, a component of the No. 226 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | X-3941-274-1 | TABLE ASSY, REEL, T | |
| 202 | 3-331-007-21 | WASHER | |
| 203 | X-3941-271-1 | ARM ASSY, PINCH | |
| 204 | 3-945-743-01 | SPRING, TORSION | |
| 205 | 3-945-783-01 | SPRING, TENSION | |
| 206 | A-7040-307-A | GUIDE (BASE) (T) BLOCK ASSY | |
| 207 | X-3941-424-1 | ROLLER ASSY, TG6 | |
| 208 | 3-947-504-01 | SCREW (M1.2X2) | |
| 209 | X-3941-267-1 | ARM (T) ASSY, GUIDE | |
| 210 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 211 | X-3941-273-1 | SOFT ASSY, T | |
| 212 | 3-945-753-01 | ARM, T SOFT | |
| 213 | 3-726-829-01 | WASHER, STOPPER | |
| 214 | X-3941-279-1 | GEAR ASSY, GOOSENECK | |
| 215 | 3-947-644-01 | RETAINER, TG5 (BASE) | |
| 216 | A-7040-321-A | CLAW BLOCK ASSY, T HARD | |
| 217 | X-3941-275-1 | TABLE ASSY, REEL, S | |
| 218 | 3-945-756-01 | SCREW (M1.4X3) | |
| 219 | X-3941-277-1 | STRING BLOCK ASSY | |
| 220 | 3-945-801-01 | BRAKE, S SOFT | |
| 221 | 3-948-810-01 | SPRING, TENSION | |
| 222 | X-3941-276-1 | TG1 ASSY | |
| 223 | 3-945-752-01 | SPRING, TORSION | |
| 224 | 3-945-799-01 | BRAKE, S HARD | |
| 225 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 226 | X-3941-265-1 | CHASSIS ASSY, LS | |
| 227 | 3-945-784-01 | PLATE, CAM, LS | |
| 228 | A-7040-306-A | GUIDE (BASE) (S) BLOCK ASSY | |
| 229 | X-3941-269-1 | ROLLER ASSY, TG3 | |
| 230 | X-3941-266-1 | ARM (S) ASSY, GUIDE | |
| 231 | 3-945-837-01 | SLIDER, GL | |
| 232 | 3-949-881-01 | SLEEVE | |
| S002 | 1-572-987-11 | SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG) | |

## 5-6. MECHANISM CHASSIS ASSEMBLY (1)


M901
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M903
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M902
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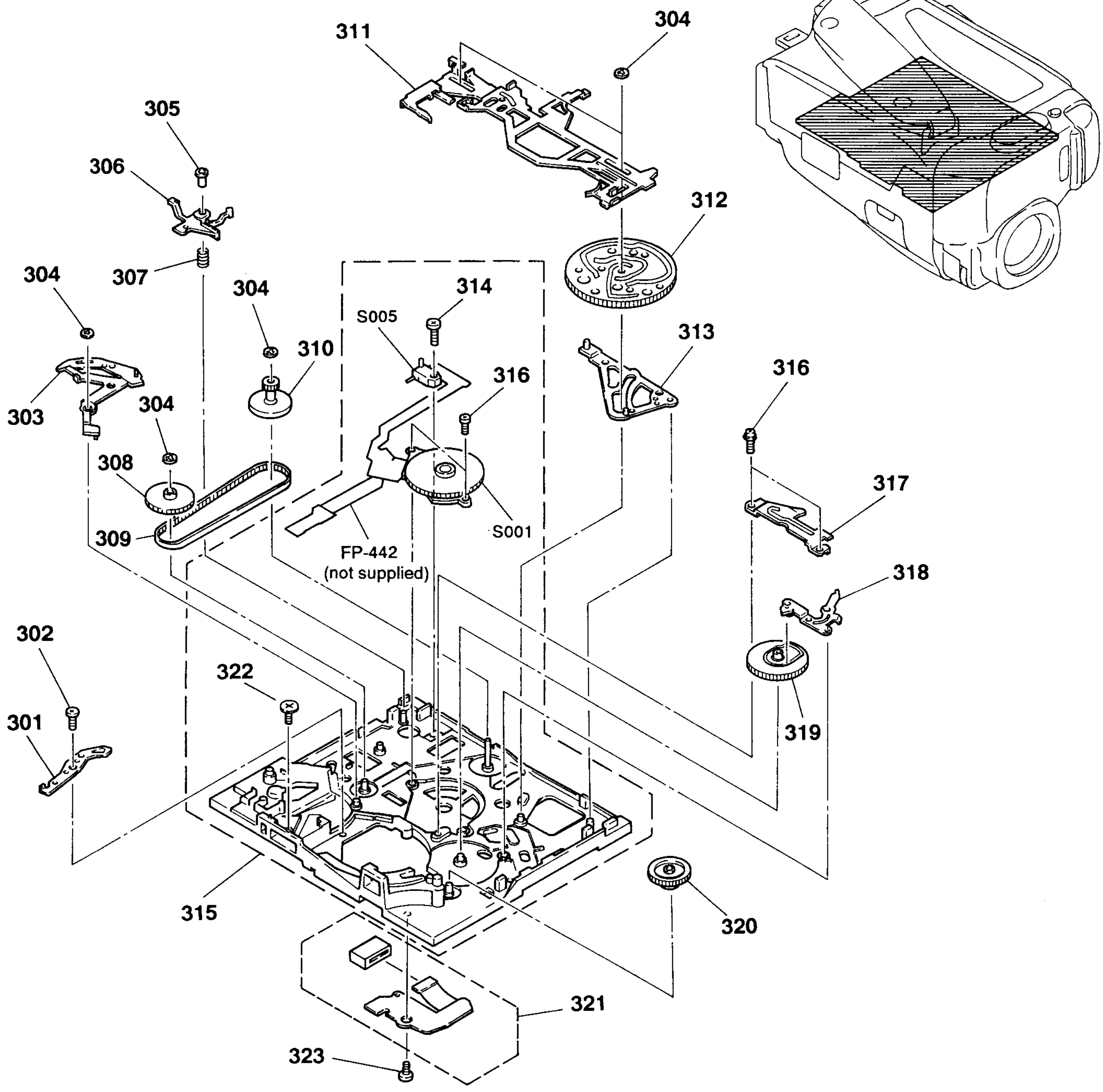
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 251 | A-7049-521-A | DRUM ASSY, UPPER (DGR-90-R) | |
| 252 | 3-945-822-01 | SPRING, LEAF, TG7 ARM | |
| 253 | A-7040-305-A | ARM BLOCK ASSY, TG7 | |
| 254 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 255 | X-3941-255-1 | PLATE (T) ASSY, SIDE | |
| 256 | 3-945-735-01 | ARM, HC CONVERSION | |
| 257 | 3-713-786-71 | SCREW (M2X5) | |
| 258 | 3-945-691-01 | PLATE (S), SIDE | |
| 259 | 3-945-701-01 | ARM, LS | |
| 260 | 3-945-702-01 | ROLLER, LS | |
| 261 | X-3941-262-1 | ROLLER ASSY, TG2 | |
| 262 | 3-945-774-01 | SPRING, COMPRESSION | |
| 263 | 3-686-493-01 | SCREW (M2X5), P1 | |
| M901 | A-7048-585-A | DRUM ASSY (DGH-90A-R) | |
| M902 | 8-835-477-01 | MOTOR, DC SCE-0101A (CAPSTAN) | |
| M903 | A-7040-304-A | MOTOR BLOCK ASSY, LM (LOADING) | |

## 5-7. MECHANISM CHASSIS ASSEMBLY (2)



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S005
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S001
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FP-442
(not supplied)
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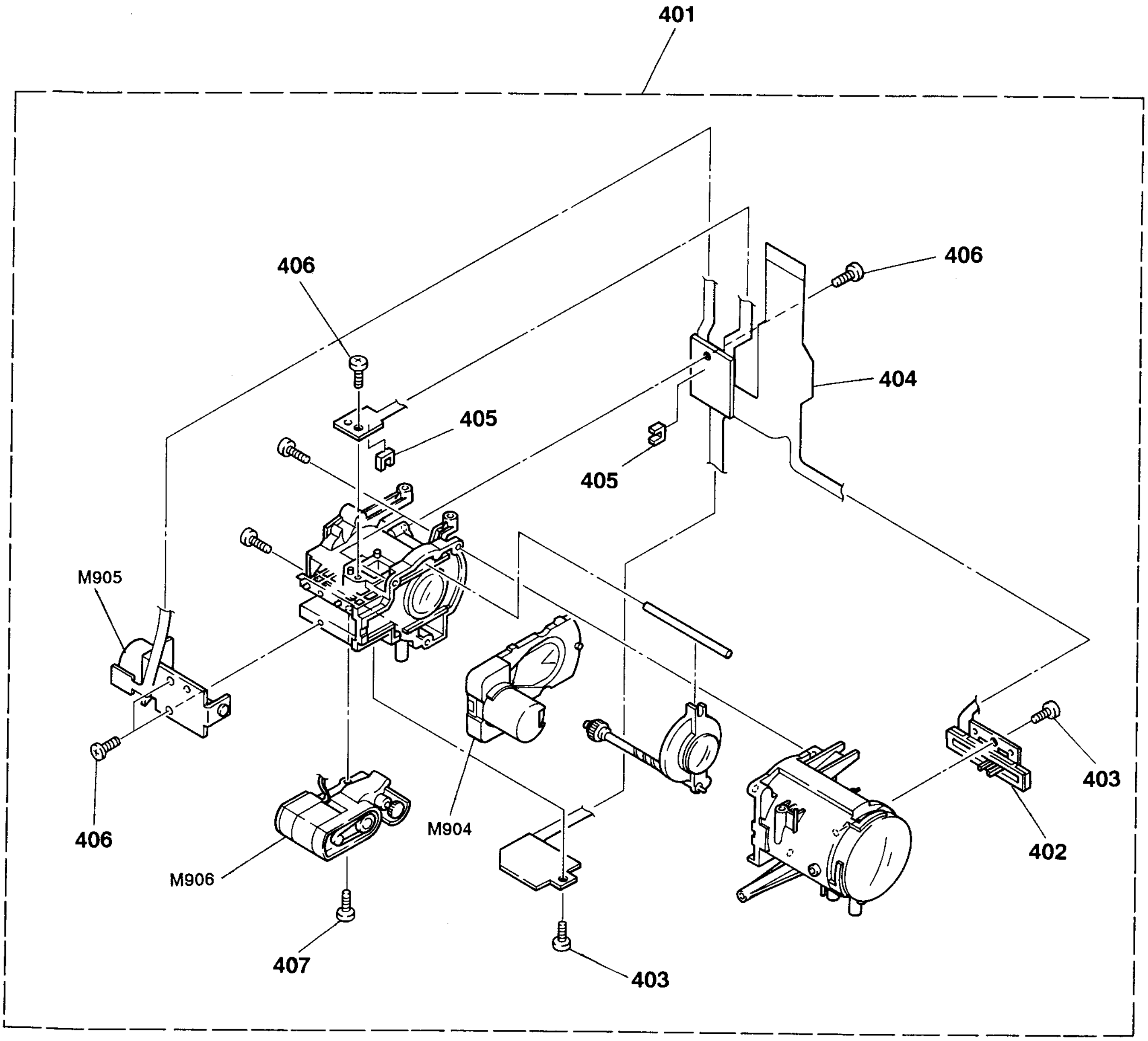
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 301 | 3-945-734-01 | ARM, HC DRIVING | |
| 302 | 3-728-103-11 | SCREW (M1.4X1.6), SPECIAL HEAD | |
| 303 | X-3941-259-1 | ARM ASSY, PINCH PRESS | |
| 304 | 3-726-829-01 | WASHER, STOPPER | |
| 305 | 3-945-730-01 | SLEEVE, EJECT | |
| 306 | 3-945-706-01 | LEVER, EJECT | |
| 307 | 3-945-729-01 | SPRING, COMPRESSION | |
| 308 | X-3941-256-1 | GEAR ASSY, CHANGE | |
| 309 | 3-944-539-01 | BELT, RELAY | |
| 310 | 3-945-695-01 | PULLEY, RELAY | |
| 311 | X-3941-260-1 | SLIDER ASSY, M | |
| 312 | 3-945-696-01 | CAM | |
| 313 | X-3941-258-1 | ARM ASSY, GL | |
| 314 | 3-713-786-71 | SCREW (M2X5) | |
| 315 | A-7040-303-A | CHASSIS ASSY, MECHANICAL | |
| 316 | 3-947-503-01 | SCREW (M1.4X2.5) | |
| 317 | 3-945-722-01 | RETAINER, GEAR | |
| 318 | X-3941-257-1 | ARM ASSY, FF | |
| 319 | 3-945-697-01 | GEAR (B), L | |
| 320 | 3-945-700-01 | GEAR (A), L | |
| 321 | A-7040-311-A | FP-444 ASSY | |
| 322 | 3-946-848-01 | SCREW, TG6 ADJUSTMENT | |
| 323 | 3-945-756-01 | SCREW (M1.4X3) | |
| S001 | 1-572-986-11 | SWITCH, ROTARY (ENCODER) | |
| S005 | 1-570-771-21 | SWITCH (C DOWN) | |

## 5-8. ZOOM LENS ASSEMBLY (VCL-6210WC)


401
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404
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M905
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M904
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402
M906
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403

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 401 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| 402 | 3-708-446-01 | METER, POTENTIAL | |
| 403 | 3-708-053-01 | SCREW, FB FITTING | |
| 404 | 3-708-493-01 | FLEXIBLE | |
| 405 | 3-708-435-01 | PHOTO INTERRUPTER | |
| 406 | 3-707-946-01 | SCREW | |
| 407 | 3-708-450-01 | SCREW, PZ | |
| M904 | 3-708-494-01 | METER ASSY, IG (IRIS) | |
| M905 | 3-708-491-01 | MOTOR ASSY, STEPPING (FOCUS) | |
| M906 | 3-708-492-01 | MOTOR ASSY, PZ (ZOOM) | |

# SECTION 6
# ELECTRICAL PARTS LIST

**AU-138** **CD-92**

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | A-7063-321-A | AU-138 BOARD, COMPLETE<br>**********************<br>(Ref. No 2,000 Series) | |
| | | ( CAPACITOR ) | |
| C601 | 1-126-607-11 | ELECT CHIP 47uF 20% 4V | |
| C605 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| C607 | 1-164-222-11 | CERAMIC CHIP 0.22uF 25V | |
| C614 | 1-164-156-11 | CERAMIC CHIP 0.1uF 25V | |
| C615 | 1-164-373-11 | CERAMIC CHIP 0.033uF 25V | |
| C617 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C618 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C627 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C628 | 1-163-809-11 | CERAMIC CHIP 0.047uF 10% 25V | |
| C629 | 1-126-607-11 | ELECT CHIP 47uF 20% 4V | |
| C630 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| C631 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C632 | 1-162-951-11 | CERAMIC CHIP 68PF 5% 50V | |
| C636 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C637 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C639 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C640 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C641 | 1-162-949-11 | CERAMIC CHIP 47PF 5% 50V | |
| C643 | 1-162-957-11 | CERAMIC CHIP 220PF 5% 50V | |
| C645 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C647 | 1-128-013-11 | ELECT CHIP 1uF 20% 50V | |
| C649 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C651 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% 25V | |
| C654 | 1-162-977-11 | CERAMIC CHIP 0.0018uF 10% 50V | |
| C655 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C657 | 1-164-005-11 | CERAMIC CHIP 0.47uF 25V | |
| C660 | 1-162-966-11 | CERAMIC CHIP 0.0022uF 10% 50V | |
| C691 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C695 | 1-128-006-11 | ELECT CHIP 4.7uF 20% 25V | |
| C699 | 1-124-778-00 | ELECT CHIP 22uF 20% 6.3V | |
| | | ( CONNECTOR ) | |
| CN601 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P | |
| CN602 | 1-573-338-11 | CONNECTOR, BOARD TO BOARD 20P | |
| CN603 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P | |
| | | ( IC ) | |
| IC601 | 8-759-823-19 | IC CXA1488R | |
| IC602 | 8-749-923-29 | IC RS-20E-T | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( COIL ) | |
| L601 | 1-410-384-31 | INDUCTOR CHIP 18uH | |
| | | ( RESISTOR ) | |
| R603 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R604 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R605 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R607 | 1-216-859-11 | METAL CHIP 1.5M 5% 1/16W | |
| R614 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R615 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R616 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R617 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R618 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R619 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R620 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R622 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R625 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R630 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R632 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R633 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R634 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R637 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R677 | 1-216-832-11 | METAL CHIP 8.2K 5% 1/16W | |
| R679 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R681 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R682 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| *************************************************************** | | | |
| * | A-7063-318-A | CD-92 BOARD, COMPLETE<br>*********************<br>(Ref. No 1,000 Series) | |
| | | ( CAPACITOR ) | |
| C875 | 1-135-214-21 | TANTAL. CHIP 4.7uF 20% 20V | |
| C876 | 1-128-013-11 | ELECT CHIP 1uF 20% 50V | |
| C877 | 1-128-008-11 | ELECT CHIP 3.3uF 20% 35V | |
| C879 | 1-162-637-11 | CERAMIC CHIP 0.47uF 16V | |
| C880 | 1-135-091-00 | TANTALUM CHIP 1uF 20% 16V | |
| C881 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C882 | 1-126-607-11 | ELECT CHIP 47uF 20% 4V | |
| C884 | 1-164-156-11 | CERAMIC CHIP 0.1uF 25V | |
| C888 | 1-135-210-11 | TANTALUM CHIP 4.7uF 20% 10V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CONNECTOR ) | |
| CN875 | 1-573-308-11 | CONNECTOR, BOARD TO BOARD 16P | |
| | | ( DIODE ) | |
| D875 | 8-719-800-76 | DIODE 1SS123 | |
| D876 | 8-719-404-46 | DIODE MA110 | |
| D877 | 8-719-820-05 | DIODE 1SS181 | |
| D878 | 8-719-404-46 | DIODE MA110 | |
| | | ( COIL ) | |
| L875 | 1-412-064-11 | INDUCTOR CHIP 100uH | |
| | | ( TRANSISTOR ) | |
| Q875 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q876 | 8-729-427-72 | TRANSISTOR XP4501 | |
| Q877 | 8-729-232-86 | TRANSISTOR 2SK1875 | |
| | | ( RESISTOR ) | |
| R877 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R878 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R879 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R880 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R881 | 1-216-819-11 | METAL CHIP 680 5% 1/16W | |
| R882 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R883 | 1-216-835-11 | METAL CHIP 15K 5% 1/16W | |
| R884 | 1-216-850-11 | METAL CHIP 270K 5% 1/16W | |
| R885 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R887 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |

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| | | | |
|---|---|---|---|
| * | A-7071-655-A | CF-32 BOARD, COMPLETE<br>********************* | |
| | | (Ref. No 7,000 Series) | |
| | | ( CONNECTOR ) | |
| CN993 | 1-566-540-11 | CONNECTOR, FPC (NON ZIF) 8P | |
| | | ( DIODE ) | |
| D992 | 8-719-404-46 | DIODE MA110 | |
| | | ( RESISTOR ) | |
| R991 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R992 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| | | ( SWITCH ) | |
| S991 | 1-692-111-11 | SWITCH, KEY BOARD (FADER) | |
| S993 | 1-692-111-11 | SWITCH, KEY BOARD (DATE) | |
| S995 | 1-692-111-11 | SWITCH, KEY BOARD (COUNTER RESET) | |
| S996 | 1-692-111-11 | SWITCH, KEY BOARD (TIME) | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| S997 | 1-692-024-21 | SWITCH, ROTARY (PROGRAM AE) | |
| | | ( BUZZER ) | |
| SP991 | 1-529-107-11 | BUZZER, PIEZOELECTRIC | |

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| * | A-7071-694-A | CN-65 BOARD, COMPLETE<br>********************* | |
| | | (Ref. No 6,000 Series) | |
| | | ( CONNECTOR ) | |
| CN518 | 1-573-310-11 | CONNECTOR, BOARD TO BOARD 20P | |
| | | ( CABLE, FLAT ) | |
| W991 | 1-696-483-11 | CABLE, FLAT (FFC-86) | |

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|---|---|---|---|
| *⚠ | A-7063-320-A | DD-48 BOARD, COMPLETE<br>********************* | |
| | | (Ref. No 1,000 Series) | |
| | | ( CAPACITOR ) | |
| C901 | 1-164-218-11 | CERAMIC CHIP 180PF 0.25PF 50V | |
| C902 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C903 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C904 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C906 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C907 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C909 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C910 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C911 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C912 | 1-163-017-00 | CERAMIC CHIP 0.0047uF 5% 50V | |
| C914 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C915 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C916 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C917 | 1-162-962-11 | CERAMIC CHIP 470PF 10% 50V | |
| C918 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C919 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C920 | 1-162-928-11 | CERAMIC CHIP 120PF 5% 50V | |
| C921 | 1-162-928-11 | CERAMIC CHIP 120PF 5% 50V | |
| C922 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C923 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C924 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C925 | 1-164-836-11 | CERAMIC CHIP 6.8uF 16V | |
| C926 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C927 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C928 | 1-164-836-11 | CERAMIC CHIP 6.8uF 16V | |
| C929 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |
| C931 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C932 | 1-165-178-11 | CERAMIC CHIP 6.8uF 16V | |
| C933 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C934 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |
| C935 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C936 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C938 | 1-164-505-11 | CERAMIC CHIP 2.2uF 16V | |
| C939 | 1-164-505-11 | CERAMIC CHIP 2.2uF 16V | |
| C940 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C942 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C943 | 1-135-177-21 | TANTALUM CHIP 1uF 20% 20V | |
| C946 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C947 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C948 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C949 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C950 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| | | ( CONNECTOR ) | |
| CN901 | 1-695-324-11 | CONNECTOR, BOARD TO BOARD 42P | |
| CN902 | 1-573-506-41 | CONNECTOR, FPC (NON ZIF) 4P | |
| | | ( DIODE ) | |
| D901 | 8-719-981-59 | DIODE FC805 | |
| D905 | 8-719-404-46 | DIODE MA110 | |
| D906 | 8-719-404-46 | DIODE MA110 | |
| | | ( IC ) | |
| IC901 | 8-759-060-94 | IC MB3785APFV-G-BND-ER | |
| | | ( JACK ) | |
| J901 | 1-537-281-41 | TERMINAL BOARD (BATTERY TERMINAL) | |
| J902 | 1-565-276-21 | JACK, ULTRA SMALL 1P (REMOTE) | |
| | | ( COIL ) | |
| L903 | 1-424-522-21 | COIL, CHOKE 10uH | |
| L904 | 1-424-522-21 | COIL, CHOKE 10uH | |
| L905 | 1-424-522-21 | COIL, CHOKE 10uH | |
| L906 | 1-424-523-21 | COIL, CHOKE 22uH | |
| L909 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |
| L910 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |
| L911 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |
| L912 | 1-424-524-21 | COIL, CHOKE 47uH | |
| L913 | 1-424-524-21 | COIL, CHOKE 47uH | |
| L914 | 1-412-034-11 | INDUCTOR CHIP 330uH | |
| L915 | 1-412-034-11 | INDUCTOR CHIP 330uH | |
| L916 | 1-412-028-11 | INDUCTOR CHIP 4.7uH | |
| | | ( LINK, IC ) | |
| ⚠PS901 | 1-532-841-21 | LINK, IC (PRF1600 1.6A) | |
| ⚠PS902 | 1-532-841-21 | LINK, IC (PRF1600 1.6A) | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( TRANSISTOR ) | |
| Q901 | 8-729-403-27 | TRANSISTOR XN4401 | |
| Q902 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q903 | 8-729-823-84 | TRANSISTOR FP102 | |
| Q904 | 8-729-804-41 | TRANSISTOR 2SB1122-S | |
| Q905 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q906 | 8-729-823-82 | TRANSISTOR FP101 | |
| Q907 | 8-729-402-81 | TRANSISTOR XN4501 | |
| Q908 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q909 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q910 | 8-729-014-20 | TRANSISTOR RN2304 | |
| | | ( RESISTOR ) | |
| R901 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R902 | 1-218-716-11 | METAL CHIP 10K 0.50% 1/16W | |
| R903 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R904 | 1-218-698-11 | METAL CHIP 1.8K 0.50% 1/16W | |
| R905 | 1-218-724-11 | METAL CHIP 22K 0.50% 1/16W | |
| R906 | 1-218-708-11 | METAL CHIP 4.7K 0.50% 1/16W | |
| R907 | 1-216-818-11 | METAL CHIP 560 5% 1/16W | |
| R908 | 1-216-847-11 | METAL CHIP 150K 5% 1/16W | |
| R909 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R910 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R911 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R912 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R913 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R914 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R915 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R916 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R917 | 1-218-716-11 | METAL CHIP 10K 0.50% 1/16W | |
| R918 | 1-216-811-11 | METAL CHIP 150 5% 1/16W | |
| R919 | 1-218-716-11 | METAL CHIP 10K 0.50% 1/16W | |
| R920 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R921 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R922 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R923 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R924 | 1-216-823-11 | METAL CHIP 1.5K 5% 1/16W | |
| R925 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R926 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R927 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R928 | 1-216-843-11 | METAL CHIP 68K 5% 1/16W | |
| R929 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R930 | 1-216-182-00 | METAL CHIP 220 5% 1/8W | |
| R931 | 1-216-182-00 | METAL CHIP 220 5% 1/8W | |
| R932 | 1-216-182-00 | METAL CHIP 220 5% 1/8W | |
| R933 | 1-216-194-00 | METAL CHIP 680 5% 1/8W | |
| R935 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R936 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R937 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R938 | 1-216-822-11 | METAL CHIP 1.2K 5% 1/16W | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R939 | 1-218-883-11 | METAL CHIP 33K 0.50% 1/16W | |
| R940 | 1-216-836-11 | METAL CHIP 18K 5% 1/16W | |
| R941 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R942 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R943 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R944 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R945 | 1-216-828-11 | METAL CHIP 3.9K 5% 1/16W | |
| R946 | 1-216-842-11 | METAL CHIP 56K 5% 1/16W | |
| R947 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R949 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R950 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R951 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R952 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R953 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| | | ( SWITCH ) | |
| S901 | 1-572-467-11 | SWITCH, PUSH (1 KEY) (EJECT) | |
| | | ( TRANSFORMER ) | |
| T901 | 1-450-874-21 | TRANSFORMER, DC-DC CONVERTER | |

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* A-7071-654-A ED-35 BOARD, COMPLETE

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(Ref. No 8,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( DIODE ) | |
| D986 | 8-719-404-46 | DIODE MA110 | |
| D987 | 8-719-404-40 | DIODE MA121 | |
| | | ( SWITCH ) | |
| S986 | 1-571-275-31 | SWITCH, SLIDE (BEEP) | |
| S987 | 1-692-111-11 | SWITCH, KEY BOARD (SUMMER TIME) | |
| S988 | 1-571-275-31 | SWITCH, SLIDE (REMOTE COMMANDER) | |
| S989 | 1-692-111-11 | SWITCH, KEY BOARD (AREA) | |
| S990 | 1-571-275-31 | SWITCH, SLIDE (EDIT) | |
| | | ( CABLE, FLAT ) | |
| W986 | 1-696-621-11 | FP-590 FLEXIBLE BOARD | |

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* A-7063-266-A JK-91 BOARD, COMPLETE

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(Ref. No 3,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | 3-719-381-01 | SCREW (M2X4) | |
| * | 3-948-974-01 | FRAME (M), JACK | |
| | | ( JACK ) | |
| J517 | 1-537-142-21 | TERMINAL BOARD (VIDEO, AUDIO, RFU DC OUT) | |
| | | ( CABLE, FLAT ) | |
| W517 | 1-696-482-11 | CABLE, FLAT (FFC-85) | |

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* A-7071-652-A LI-44 BOARD, COMPLETE

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(Ref. No 4,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CONNECTOR ) | |
| * CN516 | 1-580-055-21 | PIN, CONNECTOR 2P | |
| | | ( HOLDER, BATTERY ) | |
| H516 | 1-550-104-32 | HOLDER, BATTERY | |

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* A-7063-322-A MA-149 BOARD, COMPLETE

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(Ref. No 2,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CAPACITOR ) | |
| C551 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C552 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C553 | 1-162-960-11 | CERAMIC CHIP 220PF 10% 50V | |
| C554 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C555 | 1-162-587-11 | CERAMIC CHIP 0.039uF 10% 25V | |
| C556 | 1-164-004-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C557 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | |
| C558 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C562 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C563 | 1-126-205-11 | ELECT CHIP 47uF 20% 6.3V | |
| C566 | 1-162-638-11 | CERAMIC CHIP 1uF 16V | |
| C569 | 1-164-492-11 | CERAMIC CHIP 0.15uF 10% 16V | |
| | | ( CONNECTOR ) | |
| CN551 | 1-566-537-11 | CONNECTOR, FPC (NON ZIF) 5P | |
| CN552 | 1-580-056-21 | PIN, CONNECTOR 3P | |
| | | ( DIODE ) | |
| D552 | 8-719-404-46 | DIODE MA110 | |
| | | ( IC ) | |
| IC551 | 8-759-822-37 | IC LA7293M | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( JACK ) | |
| J551 | 1-568-027-11 | JACK, SMALL TYPE 1P (MIC) | |
| | | ( TRANSISTOR ) | |
| Q551 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| | | ( RESISTOR ) | |
| R551 | 1-216-822-11 | METAL CHIP 1.2K 5% 1/16W | |
| R552 | 1-216-830-11 | METAL CHIP 5.6K 5% 1/16W | |
| R553 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R554 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R555 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R556 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R558 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R564 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R565 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R566 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R571 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R572 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |

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* A-7071-656-A MF-191 BOARD, COMPLETE

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(Ref. No 5,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( DIODE ) | |
| D971 | 8-719-404-46 | DIODE MA110 | |
| | | ( RESISTOR ) | |
| R971 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| | | ( SWITCH ) | |
| S971 | 1-692-088-41 | SWITHC, TACTILE (FOCUS) | |
| S972 | 1-241-865-11 | RES, VAR, CARBON 10K (FOCUS RING) | |
| S973 | 1-572-467-11 | SWITCH, PUSH (1 KEY) (LENS OPEN/CLOSE) | |
| | | ( CABLE, FLAT ) | |
| W971 | 1-696-484-11 | CABLE, FLAT (FFC-87) | |

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* A-7063-319-A SL-27 BOARD, COMPLETE

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(Ref. No 5,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CAPACITOR ) | |
| C521 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C522 | 1-128-004-11 | ELECT CHIP 10uF 20% 16V | |
| C524 | 1-128-013-11 | ELECT CHIP 1uF 20% 50V | |
| C525 | 1-164-232-11 | CERAMIC CHIP 0.01uF 50V | |
| C526 | 1-163-809-11 | CERAMIC CHIP 0.047uF 10% 25V | |
| C527 | 1-162-968-11 | CERAMIC CHIP 0.0047uF 10% 50V | |
| | | ( CONNECTOR ) | |
| CN521 | 1-691-482-21 | CONNECTOR, FFC/FPC 15P | |
| CN522 | 1-691-472-21 | CONNECTOR, FFC/FPC 6P | |
| CN523 | 1-691-473-21 | CONNECTOR, FFC/FPC 7P | |
| | | ( IC ) | |
| IC521 | 8-759-059-09 | IC LB8111V | |
| | | ( TRANSISTOR ) | |
| Q521 | 8-729-402-81 | TRANSISTOR XN4501 | |
| | | ( RESISTOR ) | |
| R522 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R523 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R524 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R525 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R528 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R530 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R532 | 1-216-174-00 | METAL CHIP 100 5% 1/8W | |
| R533 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| | | ( NETWORK, RES ) | |
| RB521 | 1-236-424-11 | NETWORK, RES 10K | |
| RB522 | 1-236-424-11 | NETWORK, RES 10K | |
| | | ( FLEXIBLE BOARD ) | |
| W521 | 1-642-186-11 | FP-437 FLEXIBLE BOARD | |
| W522 | 1-696-490-12 | FP-589 FLEXIBLE BOARD | |

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* A-7071-651-A SW-205 BOARD, COMPLETE

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(Ref. No 7,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( SWITCH ) | |
| S519 | 1-553-977-00 | SWITCH, SLIDE (STBY) | |
| S520 | 1-571-315-11 | SWITCH, KEY BOARD (START/STOP) | |
| | | ( CABLE, FLAT ) | |
| W519 | 1-696-488-11 | CABLE, FLAT (FFC-92) | |

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# VC-122

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| * | A-7063-317-A | VC-122 BOARD, COMPLETE | | | | |
| | | ********************** | | | | |
| | | (Ref. No 3,000 Series) | | | | |
| | | ( CAPACITOR ) | | | | |
| C701 | 1-135-149-21 | TANTALUM CHIP | 2.2uF | 20% | 10V | |
| C702 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C703 | 1-164-361-11 | CERAMIC CHIP | 0.047uF | | 16V | |
| C705 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C706 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C707 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C708 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C709 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C710 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C711 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C712 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C713 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C714 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C716 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C717 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C718 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C719 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C721 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C722 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C723 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C724 | 1-164-634-11 | CERAMIC CHIP | 1uF | | 16V | |
| C725 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C726 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C727 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C728 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C729 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C730 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C731 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C733 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C734 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V | |
| C735 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C736 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C737 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C738 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C739 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C741 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C742 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C745 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C749 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C750 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C751 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C752 | 1-162-943-11 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C801 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C802 | 1-162-920-11 | CERAMIC CHIP | 27PF | 5% | 50V | |
| C803 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C804 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C805 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C806 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C807 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C808 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C809 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C810 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C811 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C813 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C814 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C815 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C816 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C817 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C818 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C819 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C820 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C821 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C823 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C824 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C826 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C827 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C830 | 1-164-156-11 | CERAMIC CHIP | 0.1uF | | 25V | |
| C832 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C833 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C834 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C835 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C836 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V | |
| C837 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C838 | 1-135-145-11 | TANTALUM CHIP | 0.47uF | 10% | 35V | |
| C839 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C841 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C851 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C852 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V | |
| C853 | 1-164-634-11 | CERAMIC CHIP | 1uF | | 16V | |
| C854 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C855 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C856 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C857 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C858 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C859 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C860 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V | |
| C861 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C862 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C863 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C864 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V | |
| C866 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C868 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C869 | 1-164-173-11 | CERAMIC CHIP | 0.0039uF | 10% | 50V | |
| C870 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C871 | 1-164-634-11 | CERAMIC CHIP | 1uF | | 16V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | 〈 CONNECTOR 〉 | |
| CN701 | 1-573-372-21 | CONNECTOR, BOARD TO BOARD 18P | |
| CN801 | 1-573-336-11 | CONNECTOR, BOARD TO BOARD 16P | |
| CN851 | 1-573-361-11 | CONNECTOR, FFC/FPC 21P | |
| | | 〈 TRIMMER 〉 | |
| CT801 | 1-141-356-11 | CAP, ADJ 6P | |
| | | 〈 FILTER 〉 | |
| FL701 | 1-236-834-21 | FILTER, LOW PASS | |
| FL702 | 1-415-751-21 | DELAY LINE, LC (YH) | |
| | | 〈 IC 〉 | |
| IC701 | 8-759-243-19 | IC TC7SU04F | |
| IC702 | 8-759-064-36 | IC MB88346BPFV-EF | |
| IC703 | 8-759-710-07 | IC NJM2234M | |
| IC704 | 8-752-348-92 | IC CXD2101AR | |
| IC705 | 8-759-063-18 | IC CXD2103AR | |
| IC706 | 8-752-355-56 | IC CXD2104BN | |
| IC707 | 8-752-347-93 | IC CXD2100AQ | |
| IC709 | 8-752-840-64 | IC CXP80624-434R | |
| IC712 | 8-759-073-67 | IC BR9021AF | |
| IC801 | 8-752-350-16 | IC CXD1257AR | |
| IC802 | 8-752-056-39 | IC CXA1507BR | |
| IC803 | 8-752-053-26 | IC CXA1399Q | |
| IC804 | 8-752-327-48 | IC CXD1250N | |
| IC805 | 8-752-054-61 | IC CXA1390AR | |
| IC851 | 8-759-701-24 | IC NJM3414M | |
| IC852 | 8-759-998-96 | IC LM324D | |
| IC853 | 8-759-058-47 | IC MPC1724VMEL | |
| IC854 | 8-759-823-51 | IC LB1830M | |
| IC856 | 8-759-998-98 | IC LM358D | |
| | | 〈 COIL 〉 | |
| L701 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L703 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L704 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L705 | 1-412-979-21 | INDUCTOR 1uH | |
| L706 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L708 | 1-412-979-21 | INDUCTOR 1uH | |
| L710 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L711 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L712 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L714 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L715 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L717 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L720 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L721 | 1-410-391-11 | INDUCTOR CHIP 68uH | |
| L801 | 1-412-029-11 | INDUCTOR CHIP 10uH | |
| L802 | 1-412-006-31 | INDUCTOR CHIP 10uH | |
| L803 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L804 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L851 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L853 | 1-412-031-11 | INDUCTOR CHIP 47uH | |
| | | 〈 TRANSISTOR 〉 | |
| Q701 | 8-729-928-87 | TRANSISTOR DTC124EE | |
| Q702 | 8-729-427-74 | TRANSISTOR XP4601 | |
| Q703 | 8-729-427-74 | TRANSISTOR XP4601 | |
| Q704 | 8-729-425-50 | TRANSISTOR 2SB1462Q | |
| Q706 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q707 | 8-729-428-84 | TRANSISTOR UN9111 | |
| Q708 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q709 | 8-729-427-72 | TRANSISTOR XP4501 | |
| Q801 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q802 | 8-729-427-70 | TRANSISTOR XP4401 | |
| Q851 | 8-729-425-64 | TRANSISTOR 2SD2216Q | |
| Q852 | 8-729-013-88 | TRANSISTOR RN1302 | |
| Q853 | 8-729-427-70 | TRANSISTOR XP4401 | |
| | | 〈 RESISTOR 〉 | |
| R701 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R702 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R703 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R704 | 1-216-815-11 | METAL CHIP 330 5% 1/16W | |
| R705 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R706 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R707 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R708 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R709 | 1-216-839-11 | METAL CHIP 33K 5% 1/16W | |
| R710 | 1-216-857-11 | METAL CHIP 1M 5% 1/16W | |
| R711 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R712 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R713 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R714 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R715 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R716 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R718 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R719 | 1-216-840-11 | METAL CHIP 39K 5% 1/16W | |
| R721 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R722 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R723 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R724 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R725 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R727 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R728 | 1-216-813-11 | METAL CHIP 220 5% 1/16W | |
| R729 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R730 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R731 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| R732 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |

## VC-122

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R733 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R734 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R735 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W | |
| R736 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R738 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R739 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R742 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R744 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R745 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R748 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R749 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R750 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R751 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R752 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R753 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W | |
| R754 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R755 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R756 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R757 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R758 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R759 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R760 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R761 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R762 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R769 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R770 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R771 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R775 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R776 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R777 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R778 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R779 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R780 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R781 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R782 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R783 | 1-216-863-11 | METAL CHIP | 3.3M | 5% | 1/16W | |
| R784 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R785 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R787 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R788 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R791 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R792 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R793 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R794 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R795 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R796 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R797 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R800 | 1-216-309-00 | METAL CHIP | 5.6 | 5% | 1/10W | |
| R801 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R802 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R803 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R804 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R805 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R806 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R807 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R808 | 1-216-801-11 | METAL CHIP | 22 | 5% | 1/16W | |
| R809 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R810 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R812 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R813 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R816 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R819 | 1-216-805-11 | METAL CHIP | 47 | 5% | 1/16W | |
| R821 | 1-216-863-11 | METAL CHIP | 3.3M | 5% | 1/16W | |
| R823 | 1-218-721-11 | METAL CHIP | 16K | 0.50% | 1/16W | |
| R825 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R826 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R827 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R828 | 1-218-716-11 | METAL CHIP | 10K | 0.50% | 1/16W | |
| R829 | 1-218-744-11 | METAL CHIP | 150K | 0.50% | 1/16W | |
| R830 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R851 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R852 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R853 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R854 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R855 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R856 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R857 | 1-216-848-11 | METAL CHIP | 180K | 5% | 1/16W | |
| R858 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R859 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R860 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R861 | 1-218-724-11 | METAL CHIP | 22K | 0.50% | 1/16W | |
| R862 | 1-216-848-11 | METAL CHIP | 180K | 5% | 1/16W | |
| R863 | 1-216-855-11 | METAL CHIP | 680K | 5% | 1/16W | |
| R864 | 1-216-134-00 | METAL CHIP | 2.2 | 5% | 1/8W | |
| R865 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R866 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R867 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R868 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R869 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R870 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R871 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R872 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W | |
| R873 | 1-216-814-11 | METAL CHIP | 270 | 5% | 1/16W | |
| R874 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |

( NETWORK, RES )

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| RB701 | 1-236-420-11 | NETWORK, RES | 4.7K | | | |
| RB702 | 1-236-432-11 | NETWORK, RES | 47K | | | |
| RB703 | 1-236-412-11 | NETWORK, RES | 1.0K | | | |
| RB704 | 1-236-416-11 | NETWORK, RES | 2.2K | | | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RB705 | 1-236-416-11 | NETWORK, RES 2.2K | |
| RB706 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB707 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB708 | 1-236-412-11 | NETWORK, RES 1.0K | |
| | | ( CRYSTAL ) | |
| X701 | 1-579-553-11 | VIBRATOR (12MHz) | |
| X801 | 1-579-621-11 | VIBRATOR, CRYSTAL (28.6363MHz) | |

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* A-7063-220-A VF-42 BOARD, COMPLETE

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(Ref. No 1,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | 3-942-888-01 | HOLDER, LED | |
| | | ( CAPACITOR ) | |
| C501 | 1-126-176-11 | ELECT 220uF 20% 10V | |
| C502 | 1-163-077-00 | CERAMIC CHIP 0.1uF 10% 25V | |
| C503 | 1-163-109-00 | CERAMIC CHIP 47PF 5% 50V | |
| ⚠C504 | 1-163-009-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| ⚠C505 | 1-164-758-11 | CERAMIC CHIP 0.0039uF 5% 50V | |
| ⚠C506 | 1-164-715-11 | CERAMIC CHIP 0.0068uF 5% 50V | |
| C507 | 1-127-515-11 | ELECT(SOLID) 47uF 20% 6.3V | |
| C508 | 1-164-611-11 | CERAMIC CHIP 0.001uF 10% 500V | |
| C509 | 1-124-257-00 | ELECT 2.2uF 20% 50V | |
| C510 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C511 | 1-126-090-11 | ELECT 82uF 20% 10V | |
| C512 | 1-137-306-11 | FILM CHIP 0.1uF 5% 16V | |
| C513 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| C514 | 1-131-381-00 | TANTALUM 47uF 10% 10V | |
| C515 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C516 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| | | ( CONNECTOR ) | |
| * CN501 | 1-566-759-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| * CN502 | 1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P | |
| * CN503 | 1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P | |
| | | ( DIODE ) | |
| D501 | 8-719-820-65 | DIODE TLS221 | |
| D502 | 8-719-984-02 | LED BR4371F | |
| D503 | 8-719-400-20 | DIODE MA152WA | |
| | | ( IC ) | |
| IC501 | 8-759-420-01 | IC AN2512S | |
| | | ( COIL ) | |
| L501 | 1-408-976-21 | INDUCTOR 33uH | |
| L502 | 1-408-785-21 | INDUCTOR CHIP 47uH | |
| ⚠L503 | 1-459-876-41 | COIL, FERRITE (HLC) | |
| | | ( TRANSISTOR ) | |
| Q501 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q502 | 8-729-216-31 | TRANSISTOR 2SA1163-G | |
| Q504 | 8-729-106-68 | TRANSISTOR 2SD1615A-GP | |
| | | ( RESISTOR ) | |
| R501 | 1-216-033-00 | METAL CHIP 220 5% 1/10W | |
| R502 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R503 | 1-216-041-00 | METAL CHIP 470 5% 1/10W | |
| R506 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R507 | 1-216-047-00 | METAL CHIP 820 5% 1/10W | |
| R508 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R509 | 1-216-689-11 | METAL CHIP 39K 0.5% 1/10W | |
| R510 | 1-216-005-00 | METAL CHIP 15 5% 1/10W | |
| R511 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R512 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R513 | 1-216-101-00 | METAL CHIP 150K 5% 1/10W | |
| R514 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R515 | 1-216-131-11 | METAL CHIP 2.7M 5% 1/10W | |
| R516 | 1-216-055-00 | METAL CHIP 1.8K 5% 1/10W | |
| R517 | 1-216-025-00 | METAL CHIP 100 5% 1/10W | |
| R518 | 1-216-308-00 | METAL CHIP 4.7 5% 1/10W | |
| R519 | 1-216-336-11 | METAL CHIP 47K 1% 1/10W | |
| R520 | 1-216-107-00 | METAL CHIP 270K 5% 1/10W | |
| R521 | 1-216-121-00 | METAL CHIP 1M 5% 1/10W | |
| R522 | 1-216-160-00 | METAL CHIP 27 5% 1/8W | |
| R523 | 1-216-053-00 | METAL CHIP 1.5K 5% 1/10W | |
| R524 | 1-216-113-00 | METAL CHIP 470K 5% 1/10W | |
| R525 | 1-216-097-00 | METAL CHIP 100K 5% 1/10W | |
| | | ( VARIABLE RESISTOR ) | |
| RV501 | 1-241-596-11 | RES, ADJ, METAL GRAZE 47K | |
| RV502 | 1-241-590-11 | RES, ADJ, METAL GRAZE 470 | |
| RV503 | 1-241-592-11 | RES, ADJ, METAL GRAZE 2.2K | |
| RV504 | 1-228-762-00 | RES, ADJ, METAL CHIP 1M | |
| | | ( TRANSFORMER ) | |
| ⚠T501 | 1-439-486-11 | TRANSFORMER ASSY, FLYBACK | |
| | | ( THERMISTOR ) | |
| TH501 | 1-809-350-21 | THERMISTOR, NTC (2125) 500 | |
| | | ( CABLE, FLAT ) | |
| ⚠W501 | 1-540-019-21 | SOCKET ASSY, CRT | |

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-7071-653-A | VK-27 BOARD, COMPLETE<br>********************* | | | |
| | | | | | (Ref. No 9,000 Series) |
| | | ( DIODE ) | | | |
| D976 | 8-719-404-46 | DIODE MA110 | | | |
| | | ( SWITCH ) | | | |
| S976 | 1-572-921-31 | SWITCH, KEY BOARD (STOP) | | | |
| S977 | 1-692-260-11 | SWITCH, SLIDE (POWER) | | | |
| S978 | 1-692-247-11 | SWITCH, TACTIL (2 CLICK) | | | (EDIT SEARCH (-) |
| S979 | 1-572-921-31 | SWITCH, KEY BOARD (REW) | | | |
| S980 | 1-572-921-31 | SWITCH, KEY BOARD (PB) | | | |
| S981 | 1-692-247-11 | SWITCH, TACTIL (2 CLICK) | | | (EDIT SEARCH (+) |
| S983 | 1-572-921-31 | SWITCH, KEY BOARD (FF) | | | |
| S984 | 1-572-921-31 | SWITCH, KEY BOARD (PAUSE) | | | |
| | | ( CABLE, FLAT ) | | | |
| W987 | 1-696-622-11 | PF-591 FLEXIBLE BOARD | | | |
| ************************************************************ | | | | | |
| * | A-7063-316-A | VS-95 BOARD, COMPLETE<br>********************* | | | |
| | | | | | (Ref. No 4,000 Series) |
| | 1-691-471-11 | CONNECTOR, TRANSLATION 11P | | | |
| | | ( CAPACITOR ) | | | |
| C001 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C002 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C003 | 1-162-955-11 | CERAMIC CHIP | 150PF | 5% | 50V |
| C004 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C005 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C006 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C009 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C010 | 1-135-157-21 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C011 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C012 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C013 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C014 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C018 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C019 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C020 | 1-164-633-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C021 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C022 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C023 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C024 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C025 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C026 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C027 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C028 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C029 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C030 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C035 | 1-135-157-21 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C049 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C057 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C058 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C059 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C061 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C063 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C064 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V |
| C065 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C066 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C067 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V |
| C068 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V |
| C069 | 1-162-948-11 | CERAMIC CHIP | 39PF | 5% | 50V |
| C070 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V |
| C072 | 1-162-943-11 | CERAMIC CHIP | 15PF | 5% | 50V |
| C073 | 1-162-951-11 | CERAMIC CHIP | 68PF | 5% | 50V |
| C074 | 1-162-956-11 | CERAMIC CHIP | 180PF | 5% | 50V |
| C075 | 1-162-942-11 | CERAMIC CHIP | 12PF | 5% | 50V |
| C077 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C078 | 1-162-934-11 | CERAMIC CHIP | 3PF | 0.25PF | 50V |
| C080 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C081 | 1-162-944-11 | CERAMIC CHIP | 18PF | 5% | 50V |
| C082 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C083 | 1-164-227-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C085 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C086 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C091 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C121 | 1-162-971-11 | CERAMIC CHIP | 0.001uF | | 50V |
| C122 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C123 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C124 | 1-164-346-11 | CERAMIC CHIP | 1uF | | 16V |
| C125 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C126 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C127 | 1-164-145-11 | CERAMIC CHIP | 390PF | 5% | 50V |
| C128 | 1-162-943-11 | CERAMIC CHIP | 15PF | 5% | 50V |
| C129 | 1-162-964-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C130 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V |
| C131 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C132 | 1-163-118-00 | CERAMIC CHIP | 110PF | 5% | 50V |
| C133 | 1-135-149-21 | TANTALUM CHIP | 2.2uF | 20% | 10V |
| C135 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C136 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C137 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C150 | 1-162-944-11 | CERAMIC CHIP | 18PF | 5% | 50V |
| C151 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C156 | 1-162-948-11 | CERAMIC CHIP | 39PF | 5% | 50V | |
| C159 | 1-162-946-11 | CERAMIC CHIP | 27PF | 5% | 50V | |
| C161 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C167 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C170 | 1-162-568-11 | CERAMIC CHIP | 0.33uF | | 25V | |
| C171 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V | |
| C173 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C175 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C176 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C177 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C178 | 1-164-145-11 | CERAMIC CHIP | 390PF | 5% | 50V | |
| C179 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C180 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C181 | 1-162-965-11 | CERAMIC CHIP | 0.0015uF | 10% | 50V | |
| C182 | 1-162-958-11 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C187 | 1-162-943-11 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C188 | 1-162-958-11 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C189 | 1-164-362-11 | CERAMIC CHIP | 470PF | 5% | 50V | |
| C192 | 1-162-958-11 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C193 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C194 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C199 | 1-135-149-21 | TANTALUM CHIP | 2.2uF | 20% | 10V | |
| C205 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C206 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C207 | 1-162-952-11 | CERAMIC CHIP | 82PF | 5% | 50V | |
| C208 | 1-162-967-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V | |
| C209 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C213 | 1-164-222-11 | CERAMIC CHIP | 0.22uF | | 25V | |
| C214 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C216 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C217 | 1-135-181-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V | |
| C218 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C219 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C220 | 1-126-246-11 | ELECT CHIP | 220uF | 20% | 4V | |
| C221 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V | |
| C222 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C223 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C225 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C226 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C227 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C228 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C229 | 1-135-180-21 | TANTALUM CHIP | 3.3uF | 20% | 6.3V | |
| C230 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C231 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C232 | 1-135-180-21 | TANTALUM CHIP | 3.3uF | 20% | 6.3V | |
| C233 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C234 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C235 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C236 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C237 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C238 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C239 | 1-162-954-11 | CERAMIC CHIP | 120PF | 5% | 50V | |
| C240 | 1-162-959-11 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C241 | 1-126-607-11 | ELECT CHIP | 47uF | 20% | 4V | |
| C242 | 1-162-960-11 | CERAMIC CHIP | 220PF | 10% | 50V | |
| C245 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V | |
| C246 | 1-135-157-21 | TANTALUM CHIP | 10uF | 20% | 6.3V | |
| C247 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C248 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C249 | 1-162-959-11 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C250 | 1-164-145-11 | CERAMIC CHIP | 390PF | 5% | 50V | |
| C254 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C255 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C256 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C257 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C259 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C260 | 1-162-945-11 | CERAMIC CHIP | 22PF | 5% | 50V | |
| C261 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C262 | 1-162-954-11 | CERAMIC CHIP | 120PF | 5% | 50V | |
| C263 | 1-162-951-11 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C264 | 1-162-950-11 | CERAMIC CHIP | 56PF | 5% | 50V | |
| C265 | 1-162-957-11 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C266 | 1-162-953-11 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C267 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C268 | 1-162-955-11 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C269 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C270 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C271 | 1-128-004-11 | ELECT CHIP | 10uF | 20% | 16V | |
| C272 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C273 | 1-126-205-11 | ELECT CHIP | 47uF | 20% | 6.3V | |
| C278 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V | |
| C279 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C280 | 1-162-995-11 | CERAMIC CHIP | 0.022uF | | 50V | |
| C281 | 1-135-146-21 | TANTALUM CHIP | 0.68uF | 20% | 25V | |
| C282 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C283 | 1-135-091-00 | TANTALUM CHIP | 1uF | 20% | 16V | |
| C284 | 1-162-969-11 | CERAMIC CHIP | 0.0068uF | 10% | 25V | |
| C285 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C286 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C288 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C289 | 1-164-360-11 | CERAMIC CHIP | 0.1uF | | 16V | |
| C290 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C291 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C292 | 1-135-180-21 | TANTALUM CHIP | 3.3uF | 20% | 6.3V | |
| C294 | 1-162-638-11 | CERAMIC CHIP | 1uF | | 16V | |
| C295 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C296 | 1-162-974-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C297 | 1-135-259-11 | TANTAL. CHIP | 10uF | 20% | 6.3V | |
| C298 | 1-162-947-11 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C299 | 1-162-949-11 | CERAMIC CHIP | 47PF | 5% | 50V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C300 | 1-162-953-11 | CERAMIC CHIP 100PF 5% 50V | |
| C301 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C302 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C303 | 1-135-149-21 | TANTALUM CHIP 2.2uF 20% 10V | |
| C304 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C305 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C306 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C307 | 1-135-091-00 | TANTALUM CHIP 1uF 20% 16V | |
| C401 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | |
| C402 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C404 | 1-164-346-11 | CERAMIC CHIP 1uF 16V | |
| C406 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C407 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C408 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C409 | 1-162-966-11 | CERAMIC CHIP 0.0022uF 10% 50V | |
| C412 | 1-163-037-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C413 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C414 | 1-162-919-11 | CERAMIC CHIP 22PF 5% 50V | |
| C415 | 1-165-128-11 | CERAMIC CHIP 0.22uF 16V | |
| C416 | 1-162-916-11 | CERAMIC CHIP 12PF 5% 50V | |
| C417 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C418 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C420 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C421 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C422 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C423 | 1-164-361-11 | CERAMIC CHIP 0.047uF 16V | |
| C424 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C425 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C426 | 1-164-227-11 | CERAMIC CHIP 0.022uF 10% 25V | |
| C427 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C428 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C429 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C430 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C431 | 1-162-965-11 | CERAMIC CHIP 0.0015uF 10% 50V | |
| C432 | 1-164-173-11 | CERAMIC CHIP 0.0039uF 10% 50V | |
| C433 | 1-162-937-11 | CERAMIC CHIP 6PF 0.5PF 50V | |
| C434 | 1-162-942-11 | CERAMIC CHIP 12PF 5% 50V | |
| C435 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C436 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C437 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C438 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C439 | 1-162-909-11 | CERAMIC CHIP 4PF 0.25PF50V | |
| C440 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C441 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C442 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C444 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C445 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C446 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C447 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C449 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C450 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C451 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| C452 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C453 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C454 | 1-162-927-11 | CERAMIC CHIP 100PF 5% 50V | |
| C455 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% 25V | |
| C456 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C457 | 1-162-969-11 | CERAMIC CHIP 0.0068uF 10% 25V | |
| C458 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C459 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C460 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C461 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C462 | 1-162-964-11 | CERAMIC CHIP 0.001uF 10% 50V | |
| C463 | 1-135-215-21 | TANTAL. CHIP 6.8uF 20% 16V | |
| C464 | 1-135-180-21 | TANTALUM CHIP 3.3uF 20% 6.3V | |
| C465 | 1-164-633-11 | CERAMIC CHIP 0.1uF 10% 25V | |
| C466 | 1-164-298-11 | CERAMIC CHIP 0.15uF 10% 25V | |
| C467 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C468 | 1-164-298-11 | CERAMIC CHIP 0.15uF 10% 25V | |
| C469 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C470 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C471 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C472 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C473 | 1-165-176-11 | CERAMIC CHIP 0.047uF 10% 16V | |
| C474 | 1-162-967-11 | CERAMIC CHIP 0.0033uF 10% 50V | |
| C475 | 1-162-995-11 | CERAMIC CHIP 0.022uF 50V | |
| C476 | 1-135-179-21 | TANTAL. CHIP 2.2uF 20% 16V | |
| C477 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C478 | 1-162-921-11 | CERAMIC CHIP 33PF 5% 50V | |
| C481 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C482 | 1-164-360-11 | CERAMIC CHIP 0.1uF 16V | |
| C483 | 1-162-970-11 | CERAMIC CHIP 0.01uF 10% 25V | |
| C484 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C485 | 1-135-259-11 | TANTAL. CHIP 10uF 20% 6.3V | |
| C486 | 1-162-974-11 | CERAMIC CHIP 0.01uF 50V | |
| C487 | 1-128-530-11 | ELECT CHIP 33uF 20% 10V | |

( FILTER, CERAMIC )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CF151 | 1-579-371-11 | FILTER, CERAMIC | |

( CONNECTOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN002 | 1-569-775-21 | PIN, CONNECTOR 5P | |
| CN101 | 1-566-538-11 | CONNECTOR, FPC (NON ZIF) 6P | |
| CN102 | 1-580-789-21 | PIN, CONNECTOR (SMD) 6P | |
| CN401 | 1-573-310-11 | CONNECTOR, BOARD TO BOARD 20P | |
| CN403 | 1-573-338-11 | CONNECTOR, BOARD TO BOARD 20P | |
| CN404 | 1-695-325-11 | CONNECTOR, BOARD TO BOARD 42P | |
| CN406 | 1-573-343-21 | CONNECTOR, BOARD TO BOARD 30P | |
| * CN407 | 1-580-055-21 | PIN, CONNECTOR 2P | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( DIODE ) | |
| D001 | 8-719-800-76 | DIODE 1SS123 | |
| D121 | 8-719-027-50 | DIODE MA142WK | |
| D152 | 8-719-027-48 | DIODE MA142WA | |
| D159 | 8-719-027-50 | DIODE MA142WK | |
| D160 | 8-719-027-50 | DIODE MA142WK | |
| D161 | 8-719-404-46 | DIODE MA110 | |
| D162 | 8-719-027-50 | DIODE MA142WK | |
| D163 | 8-719-027-50 | DIODE MA142WK | |
| D401 | 8-719-421-27 | DIODE MA728 | |
| D402 | 8-719-027-50 | DIODE MA142WK | |
| D403 | 8-719-404-46 | DIODE MA110 | |
| | | ( FILTER ) | |
| FL121 | 1-236-188-11 | FILTER, BAND PASS | |
| FL152 | 1-236-849-21 | FILTER, BAND PASS | |
| FL153 | 1-236-186-11 | FILTER, BAND PASS | |
| FL154 | 1-239-055-21 | FILTER, LOW PASS (CCD.PAL.Y) | |
| FL155 | 1-236-848-21 | FILTER, LOW PASS | |
| FL401 | 1-406-452-11 | COIL, OSC | |
| | | ( IC ) | |
| IC001 | 8-752-033-38 | IC CXA1202R | |
| IC003 | 8-752-053-21 | IC CXA1211M | |
| IC121 | 8-759-605-61 | IC CXA1203N | |
| IC151 | 8-752-065-54 | IC CXA1207AR | |
| IC152 | 8-752-065-56 | IC CXA1208R | |
| IC154 | 8-752-333-24 | IC CXL1506M | |
| IC155 | 8-752-053-21 | IC CXA1211M | |
| IC156 | 8-759-055-82 | IC M62353GP | |
| IC158 | 8-759-055-82 | IC M62353GP | |
| IC159 | 8-759-636-33 | IC CXA1452N | |
| IC401 | 8-759-056-84 | IC S-8420AF | |
| IC402 | 8-752-838-20 | IC CXP80624-428R | |
| IC403 | 8-759-096-79 | IC uPD75316GF-318-3B9 | |
| IC404 | 8-759-059-42 | IC CXA1481AR | |
| IC405 | 8-759-044-78 | IC BR9011BF-RE2 | |
| IC406 | 8-759-081-96 | IC uPD6456GS-620 | |
| IC407 | 8-759-145-63 | IC uPD7564G-540 | |
| IC408 | 8-759-057-60 | IC MCD004BM | |
| IC409 | 8-759-999-02 | IC TL1596CDB | |
| IC410 | 8-759-062-02 | IC MPC1720VM | |
| | | ( COIL ) | |
| L001 | 1-410-381-11 | INDUCTOR CHIP 10uH | |
| L002 | 1-412-066-21 | INDUCTOR CHIP 220uH | |
| L003 | 1-412-066-21 | INDUCTOR CHIP 220uH | |
| L005 | 1-412-060-11 | INDUCTOR CHIP 22uH | |
| L007 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L008 | 1-410-658-31 | INDUCTOR CHIP 220uH | |
| L009 | 1-410-380-31 | INDUCTOR CHIP 8.2uH | |
| L010 | 1-410-655-31 | INDUCTOR CHIP 120uH | |
| L011 | 1-412-280-31 | INDUCTOR 330uH | |
| L012 | 1-410-387-11 | INDUCTOR CHIP 33uH | |
| L013 | 1-410-657-21 | INDUCTOR CHIP 180uH | |
| L015 | 1-410-381-11 | INDUCTOR CHIP 10uH | |
| L121 | 1-410-381-11 | INDUCTOR CHIP 10uH | |
| L150 | 1-410-384-31 | INDUCTOR CHIP 18uH | |
| L152 | 1-410-385-11 | INDUCTOR CHIP 22uH | |
| L154 | 1-410-390-11 | INDUCTOR CHIP 56uH | |
| L155 | 1-410-390-11 | INDUCTOR CHIP 56uH | |
| L160 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L161 | 1-410-385-11 | INDUCTOR CHIP 22uH | |
| L162 | 1-412-280-31 | INDUCTOR 330uH | |
| L163 | 1-410-167-41 | INDUCTOR CHIP 820uH | |
| L164 | 1-410-657-21 | INDUCTOR CHIP 180uH | |
| L169 | 1-410-392-11 | INDUCTOR CHIP 82uH | |
| L170 | 1-410-381-11 | INDUCTOR CHIP 10uH | |
| L171 | 1-410-384-31 | INDUCTOR CHIP 18uH | |
| L175 | 1-410-393-11 | INDUCTOR CHIP 100uH | |
| L176 | 1-410-656-11 | INDUCTOR CHIP 150uH | |
| L177 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L178 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L179 | 1-410-379-31 | INDUCTOR CHIP 6.8uH | |
| L180 | 1-410-393-11 | INDUCTOR CHIP 100uH | |
| L181 | 1-410-393-11 | INDUCTOR CHIP 100uH | |
| L182 | 1-410-655-31 | INDUCTOR CHIP 120uH | |
| L185 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L186 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| L401 | 1-412-056-11 | INDUCTOR CHIP 4.7uH | |
| L402 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L403 | 1-412-062-11 | INDUCTOR CHIP 47uH | |
| L404 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L405 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L406 | 1-412-058-11 | INDUCTOR CHIP 10uH | |
| L407 | 1-412-052-21 | INDUCTOR CHIP 1uH | |
| | | ( LINK, IC ) | |
| ⚠PS401 | 1-576-122-21 | LINK, IC (CCP2E10 0.4A) | |
| ⚠PS402 | 1-576-123-21 | LINK, IC (CCP2E20 0.8A) | |
| | | ( TRANSISTOR ) | |
| Q001 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q003 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q008 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q010 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q019 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q020 | 8-729-120-28 | TRANSISTOR 2SC1623-L5L6 | |
| Q021 | 8-729-905-23 | TRANSISTOR 2SA1576-R | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q022 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q024 | 8-729-102-07 | TRANSISTOR 2SC2223-F13 | |
| Q025 | 8-729-014-16 | TRANSISTOR RN2302 | |
| Q026 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q121 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q123 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q124 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q125 | 8-729-117-73 | TRANSISTOR 2SC4178-F14 | |
| Q126 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q151 | 8-729-101-07 | TRANSISTOR 2SB798-DL | |
| Q152 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q154 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q158 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q160 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q161 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q162 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q166 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q168 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q170 | 8-729-420-20 | TRANSISTOR XN4312 | |
| Q171 | 8-729-117-73 | TRANSISTOR 2SC4178-F14 | |
| Q175 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q176 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q177 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q178 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q180 | 8-729-422-54 | TRANSISTOR XN4215 | |
| Q182 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q183 | 8-729-420-53 | TRANSISTOR UN5115 | |
| Q184 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q189 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q191 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q192 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q194 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q195 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q196 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q199 | 8-729-807-87 | TRANSISTOR 2SB1295-UL6 | |
| Q200 | 8-729-013-88 | TRANSISTOR RN1302 | |
| Q203 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q204 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q205 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q207 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q208 | 8-729-013-88 | TRANSISTOR RN1302 | |
| Q210 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q212 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | |
| Q214 | 8-729-420-12 | TRANSISTOR XN4213 | |
| Q217 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q219 | 8-729-403-35 | TRANSISTOR UN5113 | |
| Q220 | 8-729-402-42 | TRANSISTOR UN5213 | |
| Q221 | 8-729-420-12 | TRANSISTOR XN4213 | |
| Q222 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | |
| Q223 | 8-729-402-42 | TRANSISTOR UN5213 | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| Q229 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | | | | |
| Q230 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | | | | |
| Q231 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | | | | |
| Q232 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | | | | |
| Q233 | 8-729-402-32 | TRANSISTOR 2SD1819A-R | | | | |
| Q234 | 8-729-402-55 | TRANSISTOR 2SB1218A-R | | | | |
| Q236 | 8-729-420-56 | TRANSISTOR UN511E | | | | |
| Q237 | 8-729-425-50 | TRANSISTOR 2SB1462Q | | | | |
| Q401 | 8-729-402-48 | TRANSISTOR UN521E | | | | |
| Q403 | 8-729-403-35 | TRANSISTOR UN5113 | | | | |
| Q405 | 8-729-907-00 | TRANSISTOR DTC114EU | | | | |
| Q409 | 8-729-017-67 | TRANSISTOR 2SB1574 | | | | |
| | | ( RESISTOR ) | | | | |
| R001 | 1-216-801-11 | METAL CHIP | 22 | 5% | 1/16W | |
| R002 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R004 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R005 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R006 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R007 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R012 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W | |
| R013 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R016 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R017 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R020 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R021 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W | |
| R022 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W | |
| R023 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R024 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R025 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R026 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R027 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R028 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R029 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R030 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R031 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R033 | 1-216-791-11 | METAL CHIP | 3.3 | 5% | 1/16W | |
| R049 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R050 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R051 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R052 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R054 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R055 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R056 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R057 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R058 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R060 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |
| R061 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R062 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R063 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R064 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R065 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R066 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R067 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W | |
| R070 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W | |
| R071 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R072 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R076 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R078 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R079 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R081 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |
| R082 | 1-216-804-11 | METAL CHIP | 39 | 5% | 1/16W | |
| R083 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R085 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R086 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R087 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R088 | 1-216-808-11 | METAL CHIP | 82 | 5% | 1/16W | |
| R090 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W | |
| R097 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R122 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R123 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R124 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R125 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R126 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R127 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R129 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R130 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R131 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R132 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R133 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R134 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R135 | 1-216-832-11 | METAL CHIP | 8.2K | 5% | 1/16W | |
| R136 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R137 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R138 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R139 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R140 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R141 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R142 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R143 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R144 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R145 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R146 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R150 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R151 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R152 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |
| R153 | 1-216-304-11 | METAL CHIP | 3.3 | 5% | 1/10W | |
| R154 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R155 | 1-216-836-11 | METAL CHIP | 18K | 5% | 1/16W | |
| R156 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R158 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R160 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R161 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R164 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W | |
| R167 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R168 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R170 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R175 | 1-216-810-11 | METAL CHIP | 120 | 5% | 1/16W | |
| R177 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R178 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R179 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R189 | 1-216-828-11 | METAL CHIP | 3.9K | 5% | 1/16W | |
| R190 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R191 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R192 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R193 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R194 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R196 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R198 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R200 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R201 | 1-216-815-11 | METAL CHIP | 330 | 5% | 1/16W | |
| R202 | 1-216-840-11 | METAL CHIP | 39K | 5% | 1/16W | |
| R203 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R204 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R205 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R206 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R208 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R211 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R213 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W | |
| R216 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R217 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W | |
| R218 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R219 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R220 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W | |
| R221 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R222 | 1-216-831-11 | METAL CHIP | 6.8K | 5% | 1/16W | |
| R223 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W | |
| R224 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R226 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R228 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W | |
| R230 | 1-216-807-11 | METAL CHIP | 68 | 5% | 1/16W | |
| R231 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R232 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R238 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R242 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R243 | 1-216-809-11 | METAL CHIP | 100 | 5% | 1/16W | |
| R244 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W | |
| R245 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R246 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R247 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R248 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R250 | 1-216-810-11 | METAL CHIP | 120 | 5% | 1/16W | |
| R251 | 1-216-806-11 | METAL CHIP | 56 | 5% | 1/16W | |
| R253 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R254 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R255 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R256 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R257 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R258 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R259 | 1-216-816-11 | METAL CHIP | 390 | 5% | 1/16W | |
| R260 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R263 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R266 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R267 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R270 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R271 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R272 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R276 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R277 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R278 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R279 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R280 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R281 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R282 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R283 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R285 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R286 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R290 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R291 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R293 | 1-216-807-11 | METAL CHIP | 68 | 5% | 1/16W | |
| R294 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R295 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W | |
| R297 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R298 | 1-216-820-11 | METAL CHIP | 820 | 5% | 1/16W | |
| R299 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R300 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R301 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R302 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R303 | 1-216-846-11 | METAL CHIP | 120K | 5% | 1/16W | |
| R304 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R305 | 1-216-818-11 | METAL CHIP | 560 | 5% | 1/16W | |
| R306 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R307 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R308 | 1-216-819-11 | METAL CHIP | 680 | 5% | 1/16W | |
| R309 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R310 | 1-216-848-11 | METAL CHIP | 180K | 5% | 1/16W | |
| R311 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R312 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R314 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R315 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R316 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R318 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R320 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R321 | 1-216-816-11 | METAL CHIP | 390 | 5% | 1/16W | |
| R323 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R324 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R329 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R331 | 1-216-824-11 | METAL CHIP | 1.8K | 5% | 1/16W | |
| R333 | 1-216-822-11 | METAL CHIP | 1.2K | 5% | 1/16W | |
| R334 | 1-216-833-11 | METAL CHIP | 10K | 5% | 1/16W | |
| R335 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R337 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R339 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R341 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W | |
| R342 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W | |
| R343 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R344 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R345 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W | |
| R346 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W | |
| R347 | 1-216-823-11 | METAL CHIP | 1.5K | 5% | 1/16W | |
| R349 | 1-216-834-11 | METAL CHIP | 12K | 5% | 1/16W | |
| R350 | 1-216-838-11 | METAL CHIP | 27K | 5% | 1/16W | |
| R352 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R353 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R357 | 1-216-830-11 | METAL CHIP | 5.6K | 5% | 1/16W | |
| R358 | 1-216-828-11 | METAL CHIP | 3.9K | 5% | 1/16W | |
| R359 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R360 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| R361 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W | |
| R362 | 1-216-810-11 | METAL CHIP | 120 | 5% | 1/16W | |
| R366 | 1-216-844-11 | METAL CHIP | 82K | 5% | 1/16W | |
| R371 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W | |
| R373 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R374 | 1-216-826-11 | METAL CHIP | 2.7K | 5% | 1/16W | |
| R375 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R376 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W | |
| R377 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R378 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R379 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R380 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R381 | 1-216-839-11 | METAL CHIP | 33K | 5% | 1/16W | |
| R382 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R383 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R384 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R385 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R386 | 1-216-842-11 | METAL CHIP | 56K | 5% | 1/16W | |
| R387 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R388 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |
| R389 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W | |
| R390 | 1-216-825-11 | METAL CHIP | 2.2K | 5% | 1/16W | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R391 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R392 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R393 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R394 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R397 | 1-216-820-11 | METAL CHIP 820 5% 1/16W | |
| R398 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R401 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R403 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R404 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R405 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R407 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R408 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R409 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R410 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R411 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R412 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R413 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R414 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R415 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R416 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R417 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R418 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R419 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R420 | 1-216-856-11 | METAL CHIP 820K 5% 1/16W | |
| R421 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R422 | 1-216-829-11 | METAL CHIP 4.7K 5% 1/16W | |
| R423 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R424 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R425 | 1-216-849-11 | METAL CHIP 220K 5% 1/16W | |
| R426 | 1-216-856-11 | METAL CHIP 820K 5% 1/16W | |
| R427 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R428 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R429 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R430 | 1-216-851-11 | METAL CHIP 330K 5% 1/16W | |
| R431 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R432 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R433 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R435 | 1-216-821-11 | METAL CHIP 1K 5% 1/16W | |
| R436 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R437 | 1-216-817-11 | METAL CHIP 470 5% 1/16W | |
| R438 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R439 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R441 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R442 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R443 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R445 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R447 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R448 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R449 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R450 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R451 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R452 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R453 | 1-216-841-11 | METAL CHIP 47K 5% 1/16W | |
| R454 | 1-216-825-11 | METAL CHIP 2.2K 5% 1/16W | |
| R456 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R457 | 1-216-837-11 | METAL CHIP 22K 5% 1/16W | |
| R460 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R461 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R462 | 1-216-809-11 | METAL CHIP 100 5% 1/16W | |
| R463 | 1-216-827-11 | METAL CHIP 3.3K 5% 1/16W | |
| R468 | 1-216-039-00 | METAL CHIP 390 5% 1/10W | |
| R469 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R470 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R471 | 1-216-838-11 | METAL CHIP 27K 5% 1/16W | |
| R472 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R473 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R474 | 1-217-671-11 | METAL CHIP 1 5% 1/10W | |
| R475 | 1-217-671-11 | METAL CHIP 1 5% 1/10W | |
| R476 | 1-216-826-11 | METAL CHIP 2.7K 5% 1/16W | |
| R479 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R480 | 1-217-671-11 | METAL CHIP 1 5% 1/10W | |
| R481 | 1-217-671-11 | METAL CHIP 1 5% 1/10W | |
| R484 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R485 | 1-216-845-11 | METAL CHIP 100K 5% 1/16W | |
| R487 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R489 | 1-216-831-11 | METAL CHIP 6.8K 5% 1/16W | |
| R490 | 1-216-833-11 | METAL CHIP 10K 5% 1/16W | |
| R491 | 1-216-296-00 | METAL CHIP 0 5% 1/8W | |
| R492 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| R493 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |

〈 THERMISTOR 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R073 | 1-809-358-21 | THERMISTOR, NTC (2125) 500 | |
| R113 | 1-809-358-21 | THERMISTOR, NTC (2125) 500 | |

〈 NETWORK, RES 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RB401 | 1-236-442-11 | NETWORK, RES 330K | |
| RB402 | 1-236-907-11 | NETWORK, RES (CHIP TYPE) 100K | |
| RB403 | 1-236-907-11 | NETWORK, RES (CHIP TYPE) 100K | |
| RB404 | 1-236-908-11 | NETWORK, RES (CHIP TYPE) 10K | |
| RB405 | 1-236-436-11 | NETWORK, RES 100K | |
| RB406 | 1-236-908-11 | NETWORK, RES (CHIP TYPE) 10K | |
| RB407 | 1-236-907-11 | NETWORK, RES (CHIP TYPE) 100K | |
| RB408 | 1-236-908-11 | NETWORK, RES (CHIP TYPE) 10K | |
| RB409 | 1-236-904-11 | NETWORK, RES (CHIP TYPE) 1.0K | |
| RB410 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB411 | 1-236-424-11 | NETWORK, RES 10K | |
| RB414 | 1-236-904-11 | NETWORK, RES (CHIP TYPE) 1.0K | |
| RB416 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB418 | 1-236-408-11 | NETWORK, RES 470 | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RB419 | 1-236-412-11 | NETWORK, RES 1.0K | |
| RB420 | 1-236-904-11 | NETWORK, RES (CHIP TYPE) 1.0K | |
| RB421 | 1-236-908-11 | NETWORK, RES (CHIP TYPE) 10K | |
| RB422 | 1-236-424-11 | NETWORK, RES 10K | |
| RB423 | 1-236-424-11 | NETWORK, RES 10K | |
| RB424 | 1-236-424-11 | NETWORK, RES 10K | |
| RB425 | 1-236-424-11 | NETWORK, RES 10K | |
| RB426 | 1-236-412-11 | NETWORK, RES 1.0K | |
| | | ( VARIABLE RESISTOR ) | |
| RV151 | 1-238-087-11 | RES, ADJ, CERMET 1K | |
| | | ( FLEXIBLE BOARD ) | |
| W001 | 1-696-489-11 | FP-588 FLEXIBLE BOARD | |
| W405 | 1-644-285-11 | FP-572 FLEXIBLE BOARD | |
| | | ( CRYSTAL ) | |
| X151 | 1-579-366-11 | VIBRATOR, CRYSTAL (4.43MHz) | |
| X401 | 1-579-063-21 | VIBRATOR, CERAMIC (4.19MHz) | |
| X402 | 1-579-049-21 | VIBRATOR, CRYSTAL (32kHz) | |
| X403 | 1-579-368-31 | VIBRATOR, CRYSTAL (11.719MHz) | |
| X404 | 1-579-551-11 | VIBRATOR, CERAMIC (700kHz) | |

* * *

## MISCELLANEOUS

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 14 | 1-696-487-11 | CABLE, FLAT (FFC-90) | |
| 18 | A-7091-800-A | MICROPHONE UNIT | |
| 80 | 1-692-257-11 | SWITCH, PUSH (ZOOM) | |
| 106 | 1-547-558-21 | FILTER BLOCK, OPTICAL | |
| 108 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| 401 | 1-547-548-11 | LENS, ZOOM (VCL-6210WC) | |
| IC875 | A-7030-369-A | CCD BLOCK ASSY (AUTO) (ICX055AK-2) (CCD IMAGER) | |
| H516 | 1-550-104-32 | HOLDER, BATTERY | |
| M901 | A-7048-585-A | DRUM ASSY (DGH-90A-R) | |
| M902 | 8-835-477-01 | MOTOR, DC SCE-0101A (CAPSTAN) | |
| M903 | A-7040-304-A | MOTOR BLOCK ASSY, LM (LOADING) | |
| M904 | 3-708-494-01 | METER ASSY, IG (IRIS) | |
| M905 | 3-708-491-01 | MOTOR ASSY, STEPPING (FOCUS) | |
| M906 | 3-708-492-01 | MOTOR ASSY, PZ (ZOOM) | |
| ⚠PS901 | 1-532-841-21 | LINK, IC 1.6A/90V | |
| ⚠PS902 | 1-532-841-21 | LINK, IC 1.6A/90V | |
| S001 | 1-572-986-11 | SWITCH, ROTARY (ENCODER) | |
| S002 | 1-572-987-11 | SWITCH, PUSH (3 KEY) | |
| S005 | 1-570-771-21 | SWITCH (C DOWN) | |
| V901 | 1-452-565-11 | CRT ASSY | |
| ⚠W501 | 1-540-019-21 | SOCKET ASSY, CRT | |
| W517 | 1-696-482-11 | CABLE, FLAT (FFC-85) | |
| W519 | 1-696-488-11 | CABLE, FLAT (FFC-92) | |
| W971 | 1-696-484-11 | CABLE, FLAT (FFC-87) | |
| W991 | 1-696-483-11 | CABLE, FLAT (FFC-86) | |

* * *

## ACCESSORIES & PACKING MATERIALS

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | A-6768-254-A | RFU ADAPTOR (RFU-90E) (AEP) | |
| | A-6767-707-A | RFU ADAPTOR (RFU-89EA) (UK) | |
| | A-6767-706-A | RFU ADAPTOR (RFU-89EA) (E) | |
| | A-6768-255-A | RFU ADAPTOR (RFU-90AS) (Australian) | |
| | 1-465-927-81 | REMOTE COMMANDER (CAM CORDER) (RMT-507) | |
| | 1-571-164-11 | SWITCH, ANTENNA CHANGE (CABLE) (UK, E) | |
| | 3-712-673-01 | SCREWDRIVER (UK, E) | |
| | 3-738-517-01 | BELT (S), SHOULDER | |
| * | 3-754-318-01 | INSTRUCTION | |
| | 3-755-493-41 | MANUAL, INSTRUCTION (ENGLISH) (AEP, UK) | |
| | 3-755-493-51 | MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (AEP) | |
| | 3-755-493-61 | MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN) (AEP) | |
| | 3-755-774-61 | MANUAL, INSTRUCTION (ENGLISH) (E, Australian) | |
| | 3-755-774-71 | MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (E) | |
| | 3-755-774-81 | MANUAL, INSTRUCTION (ARABIC) (E) | |
| | 3-755-774-91 | MANUAL, INSTRUCTION (CHINESE) (E) | |
| | 3-755-493-71 | MANUAL, INSTRUCTION (PORTUGUESE) (AEP) | |
| | 3-755-493-81 | MANUAL, INSTRUCTION (DANISH, FINNISH) (AEP) | |
| | 3-756-122-11 | INSTRUCTION (CARRYING CASE) (TR303EP) | |
| | 3-941-737-01 | BELT, SHOULDER | |
| | 3-943-154-11 | HOLDER (B), REMOTE CONTROL | |
| * | 3-949-004-01 | CUSHION, ACC (TR303E) | |
| * | 3-949-005-01 | CUSHION (LOWER) (TR303E) | |
| * | 3-949-006-11 | INDIVIDUAL CARTON (TR303E) | |
| * | 3-950-790-01 | CASE, CARRYING, SOFT (TR303EP) | |
| * | 3-950-791-01 | CUSHION (FRONT), INNER (TR303EP) | |
| * | 3-950-792-01 | CUSHION (REAR), INNER (TR303EP) | |
| * | 3-950-793-01 | SPACER (TR303EP) | |
| * | 3-950-794-01 | PLATE, INNER (TR303EP) | |
| * | 3-950-795-11 | INDIVIDUAL CARTON (TR303EP) | |
| * | 3-952-142-01 | BELT, CARRYING (TR303EP) | |
| * | 3-952-143-01 | CASE (LOWER) CARRYING, SOFT (TR303EP) | |
| ** | AC-V35 | AC POWER ADAPTOR | |
| *** | NP-55 | BATTERY PACK | |

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

* * *

## HARDWARE LIST

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| #1 | 7-627-853-57 | PRECISION SCREW +2X5 | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

# SECTION 7
# CAMERA SECTION ADJUSTMENTS

**When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 198.**

## 7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

### 7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

| Ref. No. | Name | Part Code | Usage |
|---|---|---|---|
| J-1 | Filter for color temperature correction (C14) | J-6080-058-A | Auto white balance adjustment/check<br>White balance adjustment/check |
| J-2 | ND filter 1.0 | J-6080-808-A | Max gain adjustment (2 used)<br>White balance check |
|  | ND filter 0.4 | J-6080-806-A | Max gain adjustment |
|  | ND filter 0.3 | J-6080-818-A | White balance adjustment |
|  | ND filter 0.1 | J-6080-807-A | Max gain adjustment |
| J-3 | Pattern box PTB-500 | J-6029-140-A |  |
| J-4 | Color chart for pattern box | J-6020-250-A |  |
| J-5 | Adjusting remote control unit (RM-95-remodeled in part)^Note 1 | J-6082-053-B |  |
| J-6 | Extension cord (10P, 1 mm) | J-6082-064-A | For extension of JK-91 board |
| J-7 | Extension cord (20P, 0.8 mm) | J-6082-196-A | For extension of CN-65 board (Cabinet (R))<br>(For the video and the camera section adjustment) |
|  |  |  | For extension of AU-138 board<br>(During the repair of AU-138 board) |
| J-8 | Extension cord (16P, 0.8 mm) | J-6082-136-A | For the extension of the lens block<br>(During the repair of the camera section) |
| J-9 | Relay board (21P, 0.5 mm)^Note 2 | J-6082-176-A | For the extension of the lens block<br>(During the repair of the camera section) |
| J-10 | Measuring pin for camera section | J-6082-139-A | For the camera section adjustment |
| J-11 | Extension cord (42P, 0.8 mm) | J-6082-195-A | For the extension of DD-48 board<br>(During the repair of the video section) |
| J-12 | Siemens star | J-6080-875-A | For flange back check |
| J-13 | Extension cord (20P, 0.5 mm)^Note 2 | J-6082-138-A | For extension between the lens block (FPC) and VC-122 board (CN851)<br>(During the repair of the camera section) |
| J-14 | Extension board (30P, 0.8 mm) | J-6082-167-A | For the extension of VS-95 board<br>(For the mecha deck check) |

**Note 1:** If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

**Note 2:** The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-122 board (CN851).

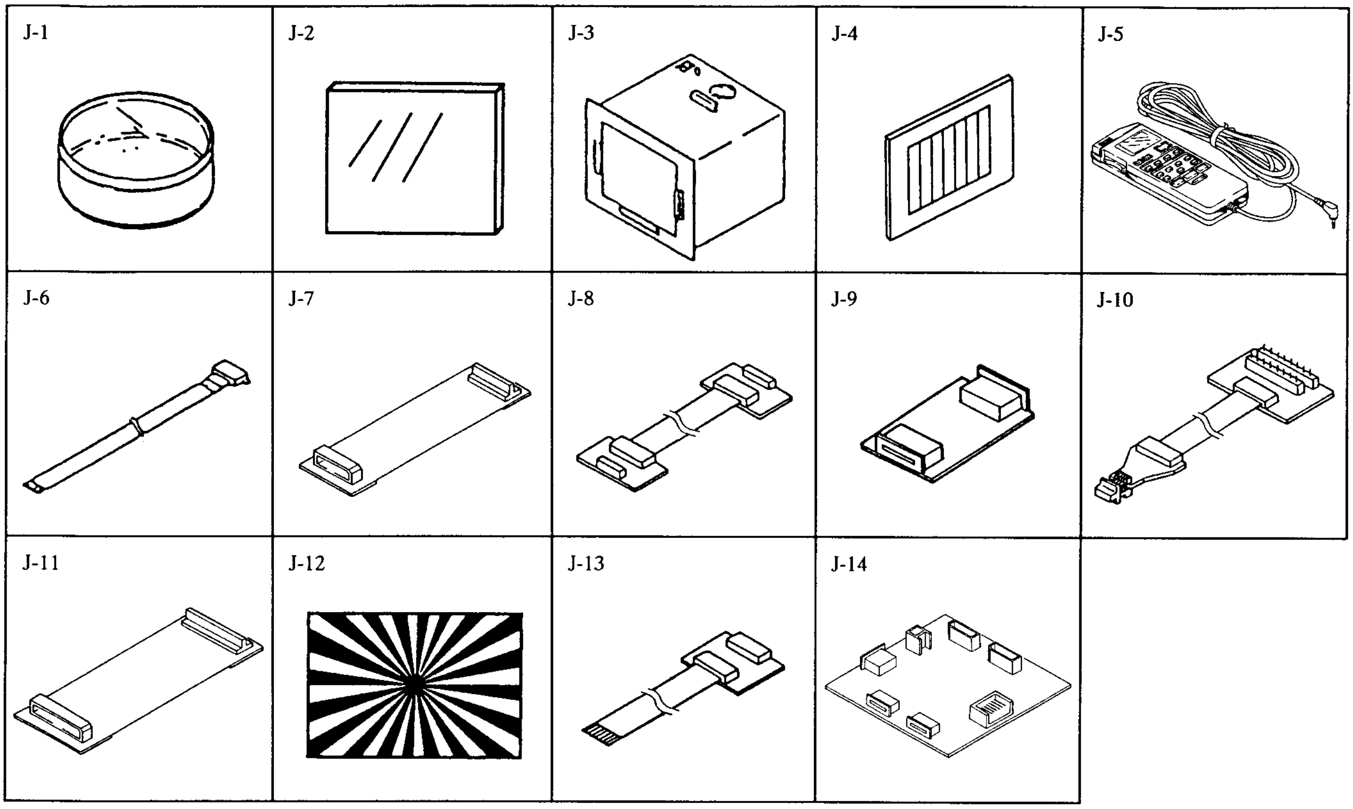

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13
J-14

Fig. 7-1.

### 7-1-2. Preparations

**Note:** For further details on how to remove the cabinet and each board, refer to "1. Disassembly".

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-95 board CN102.

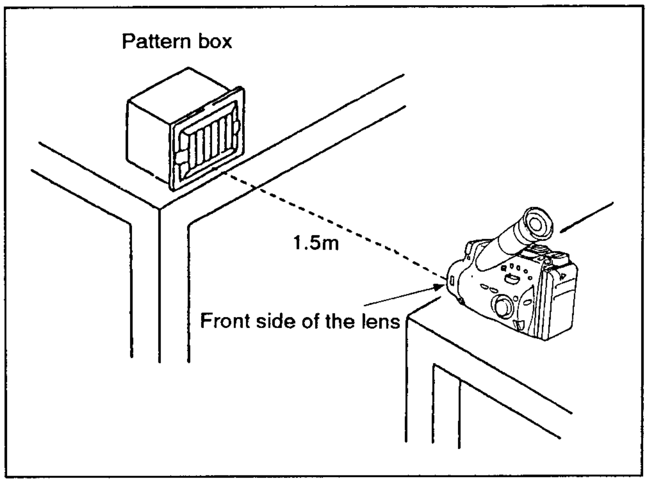

Pattern box
1.5m
Front side of the lens

Fig. 7-2.

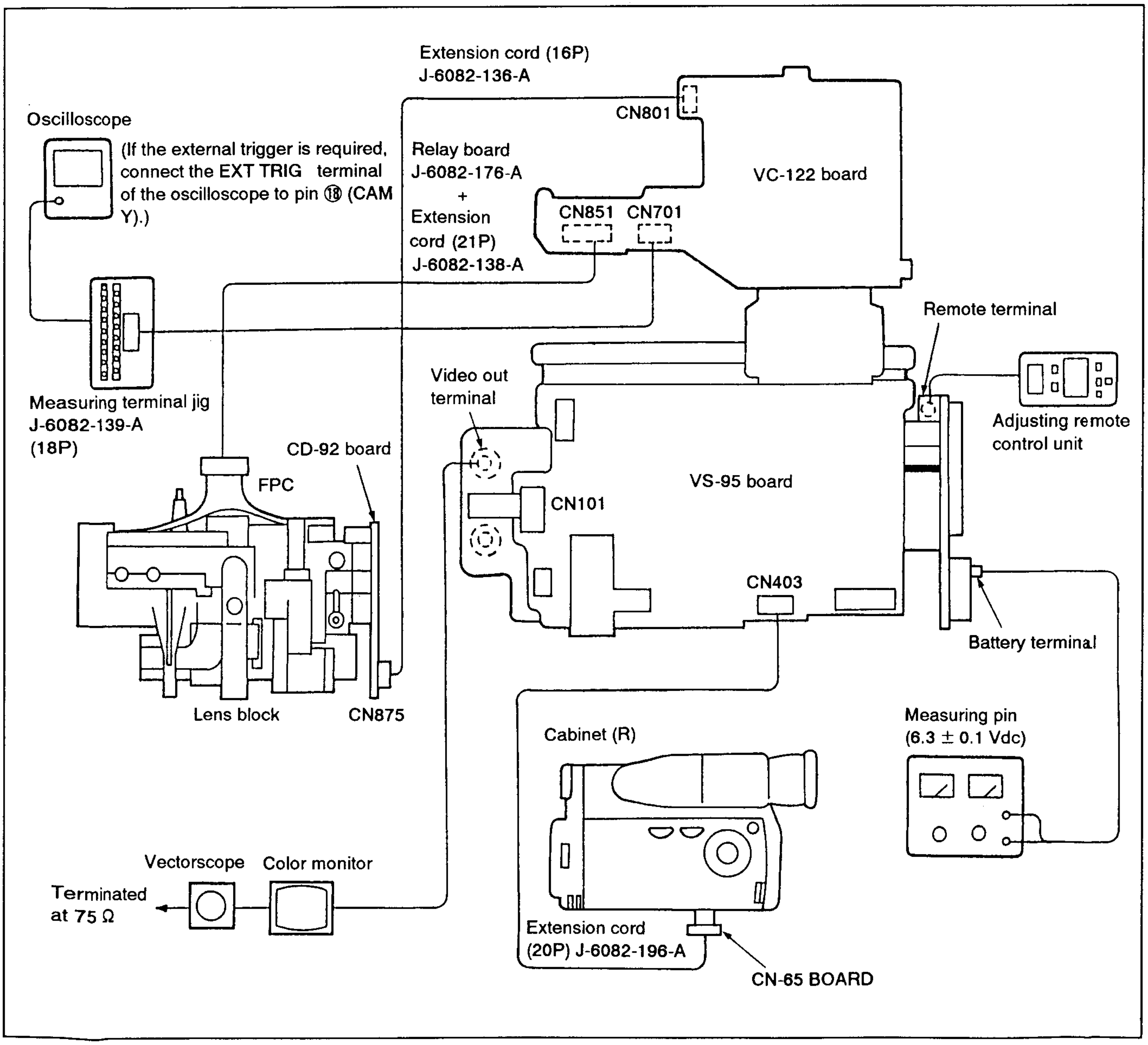

Extension cord (16P)
J-6082-136-A
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to pin ⑱ (CAM Y).)
CN801
Relay board
J-6082-176-A
+
Extension
cord (21P)
J-6082-138-A
VC-122 board
CN851
CN701
Remote terminal
Video out terminal
Measuring terminal jig
J-6082-139-A
(18P)
CD-92 board
FPC
Adjusting remote control unit
VS-95 board
CN101
CN403
Battery terminal
Lens block
CN875
Cabinet (R)
Measuring pin
(6.3 ± 0.1 Vdc)
Vectorscope
Color monitor
Terminated at 75 Ω
Extension cord
(20P) J-6082-196-A
CN-65 BOARD

Fig. 7-3.

## 7-1-3. Precautions

### 1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (VK-27 board S977)····Camera
2. Standby switch (SW-205 board S519)·················· Standby
3. LENS OPEN switch (MF-191 board S973) ············· OPEN
4. FOCUS button (MF-191 board S971) ···············MANUAL
5. PROGRAM AE selector (CF-32 board S997) ·····NORMAL

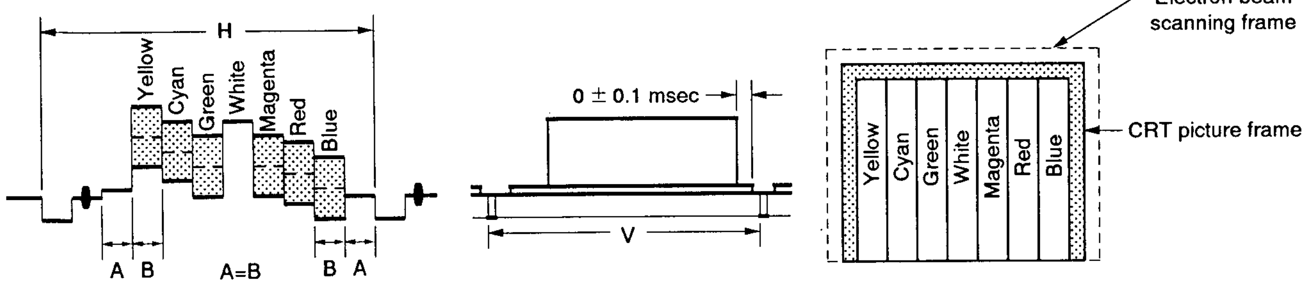
### 2. Adjustment Procedure

Perform in the given order as a rule.

### 3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

Color bar chart standard picture frame



H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Electron beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

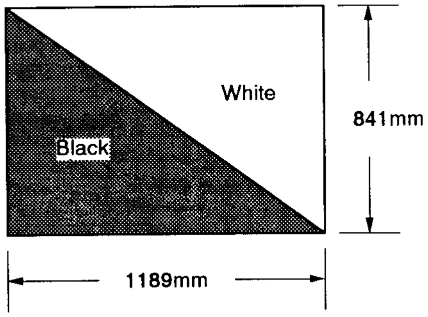
Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.



White
Black
841mm
1189mm

Fig. 7-5.

**Note:** Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

### 7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-122 board IC702). These processes are carried out by the camera micro processor (VC-122 board IC709). This micro processor reads the data written in the non-volatile memory (VC-122 board IC712), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

### 1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (DD-48 board J902).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

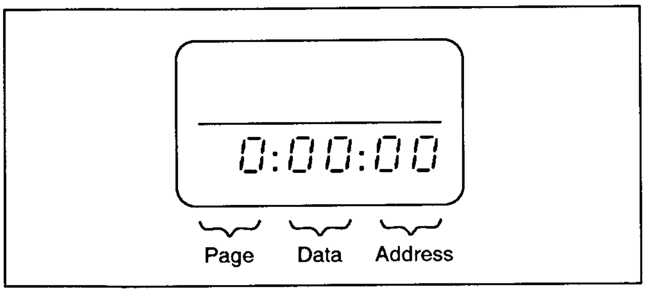


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

| **Hexadecimal notation** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Display on LCD** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | c | d | E | F |
| **Decimal notation conversion value** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Table 7-1.

   - Changing the address
     The address will increase when the FF ( ►► ) button is pressed, and decrease when the REW ( ◄◄ ) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY ( ► ) button is pressed, and decrease when the STOP ( ■ ) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

### 2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

### 7-1-5. Page F Address List

**Note 1:** The data listed in the adjustment data memo column are fixed values.

**Note 2:** The adjustment data initial values are the values after performing "Page F Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

| Address | Name | Function<br>[ ] indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 00 | ID | Set ID | 3E | 3E |
| 01 | FADER LEVEL | AE REF level modification during fader | E0 | E0 |
| 02 | FADER ENDTIM | The setting of the AE REF modulation time during fader | 10 | 10 |
| 03 | CS SL | Carrier balance adjustment | 35 | |
| 04 | VSUB | CCD imager V SUB adjustment [IC702 ③] | 80 | |
| 05 | VPGH | CCD imager VRG adjustment [IC702 ④] | 80 | |
| 06 | VREF Y | Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤] | 7B | |
| 07 | VREF C | Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥] | 99 | |
| 08 | HALL GAIN | Hole amplifier gain adjustment [IC702 ⑦] } HALL adjustment | 47 | |
| 09 | HALL OFFSET | Hole amplifier offset adjustment [IC702 ⑧] | 71 | |
| 0A | LOWLIGHT CS | Low luminance intensity REF level modulation start setting | C0 | C0 |
| 0B | REF 2V | 2V standard voltage for hole element [IC702 ⑫] | 68 | 68 |
| 0C | AD REF | Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬] | 72 | |
| 0D | CORE DETH | CCD correction control | 04 | 04 |
| 0E | CORE VTR DELAY | 1HDL longitudinal setting during VTR playback | 16 | 16 |
| 0F | CORE APCN4 | Horizontal aperture setting | 35 | 35 |
| 10 | CORE APCN5 | Vertical aperture setting | 3D | 3D |
| 11 | CORE EFECT | Special effect control | A0 | A0 |
| 12 | CORE MATR | BLUE matrix constant | 24 | 24 |
| 13 | CORE MATB | RED matrix constant | 6C | 6C |
| 14 | CORE BURST LEVEL | Burst flag level setting, color modulation ON/OFF<br>Data \| Adjustment modeAdjustment<br>2E \| Color modulation stopped<br>38 \| Normal level | 38 | 38 |
| 15 | CORE CHROMA DLY | Y/C delay adjustment | 02 | 02 |
| 16 | CORE Y SETUP | Set up level setting | 06 | 06 |
| 17 | CORE VHAPCN | Slice and level setting of the aperture signal | 17 | 17 |
| 18 | CORE B-Y GAIN | B–Y GAIN } Color reproduction adjustments | 13 | |
| 19 | CORE R-Y GAIN | R–Y GAIN | 11 | |
| 1A | CORE R-Y HUE | R–Y HUE | FF | |
| 1B | CORE B-Y HUE | B–Y HUE | FD | |
| 1C | CS/APCCUT | Low luminance intensity aperture and chroma suppress level | 22 | 22 |

Table 7-2 (1).

| Address | Name | Function<br>[ ] Indicate the adjustment voltage output terminal | | Adjustment data | |
|---|---|---|---|---|---|
| | | | | Initial value | Memo column |
| 1D | NEXT LINE DEFECT BIT | CCD correction pattern | CCD imager correction data write | 00 | |
| 1E | CCD DEFECT0 | CCD correction data | | 00 | |
| 1F | CCD DEFECT1 | CCD correction data | | 00 | |
| 20 | CCD DEFECT2 | CCD correction data | | 00 | |
| 21 | CCD DEFECT3 | CCD correction data | | 00 | |
| 22 | CCD DEFECT4 | CCD correction data | | 00 | |
| 23 | CCD DEFECT5 | CCD correction data | | 00 | |
| 24 | CCD DEFECT6 | CCD correction data | | 00 | |
| 25 | CCD DEFECT7 | CCD correction data | | 00 | |
| 26 | CCD DEFECT8 | CCD correction data | | 00 | |
| 27 | CCD DEFECT9 | CCD correction data | | 00 | |
| 28 | CCD DEFECT10 | CCD correction data | | 00 | |
| 29 | CCD DEFECT11 | CCD correction data | | 00 | |
| 2A | CCD DEFECT12 | CCD correction data | | 00 | |
| 2B | CCD DEFECT13 | CCD correction data | | 00 | |
| 2C | CCD DEFECT14 | CCD correction data | | 00 | |
| 2D | RREF L | 3200k Red standard data LSB | Auto white balance preset adjustment | 72 | |
| 2E | RREF H | 3200k Red standard data MSB | | 5F | |
| 2F | GREF L | 3200k Green standard data LSB | | D4 | |
| 30 | GREF H | 3200k Green standard data MSB | | 63 | |
| 31 | BREF L | 3200k Blue standard data LSB | | 3B | |
| 32 | BREF H | 3200k Blue standard data MSB | | 2C | |
| 33 | RCONTREF | 3200k RCONT adjustment value | Pre-white balance adjustment | 42 | |
| 34 | BCONTREF | 3200k BCONT adjustment value | | 4A | |
| 35 | AWB NOWM R | Red regular correction coefficient | Auto white balance adjustment | 7E | |
| 36 | AWB NORM B | Blue regular correction coefficient | | 96 | |
| 37 | AWB SHUT IN | Indoor determination shutter data | | A8 | A8 |
| 38 | ABW SHUT OUT | Outdoor determination shutter data | | A0 | A0 |
| 39 | AWB IRIS IN | Indoor determination hole data | IRIS IN/OUT adjustment | 79 | |
| 3A | AWB IRIS OUT | Outdoor determination hole data | | 7F | |
| 3B | AWB G LEVEL | High luminance section green integral level | | 02 | 02 |
| 3C | AWB G WIDTH | High luminance section green integral level range | | 03 | 03 |
| 3D | DMAT HUE | Variable linear matrix HUE coefficient | Linear matrix adjustment | 00 | |
| 3E | DMAT GAIN | Variable linear matrix GAIN coefficient | | 00 | |
| 3F | AWB SELECT | AWB mode selection | | 00 | 00 |
| 40 | AWB DIFF | Standard difference from the outdoor fixed value | | 0A | 0A |
| 41 | AWB BOTTOM SLP R | AWB incoming frame bottom R coefficient | | 48 | 48 |
| 42 | AWB BOTTOM SLP B | AWB incoming frame bottom B coefficient | | 78 | 78 |
| 43 | AWB MIDDLE SLP R | AWB incoming frame middle R coefficient | | 60 | 60 |
| 44 | AWB MIDDLE SLP B | AWB incoming frame middle B coefficient | | 40 | 40 |
| 45 | AWB TOP SLP R | AWB incoming frame top R coefficient | | 66 | 66 |
| 46 | AWB TOP SLP B | AWB incoming frame top B coefficient | | 18 | 18 |

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function<br>[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>C2</td><td>C2</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>8C</td><td>8C</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>AD</td><td>AD</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>96</td><td>96</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>78</td><td>78</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>60</td><td>60</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>66</td><td>66</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>59</td><td>59</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6E</td><td>6E</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>1B</td><td>1B</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5E</td><td>5E</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>39</td><td>39</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>01</td><td>High speed tracking mode</td></tr><tr><td>0C</td><td>Normal</td></tr></table></td><td>0C</td><td>0C</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment mode</td></tr><tr><td>F1</td><td>All area tracking mode</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>1E</td><td>1E</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side off set</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
<tr><td>68</td><td>AE FUNCTION</td><td>SW for turning each AE function ON and OFF</td><td>02</td><td>02</td></tr>
</table>

Table 7-2 (3).

| Address | Name | Function<br>[ ] indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 69 | BL HOSEIH | Forcible back light level setting (upper) | 40 | 40 |
| 6A | JITEISU DOWN | Constant during loop response DOWN side | 28 | 28 |
| 6B | JITEISU UP | Constant during loop response UP side | 0D | 0D |
| 6C | AE KNEE | KNEE setting value for AE | FF | FF |
| 6D | ORETEN SET | Variable point due to time constant error amount | 13 | 13 |
| 6E | OMOMIOUT | Outer frame weighting amount | 40 | 40 |
| 6F | AFC WIDE | Coefficient required for the ANF integral loop | 03 | 03 |
| 70 | AFC GAIN | Loop gain of the flickerless loop | 01 | 01 |
| 71 | AFC LIMIL | Limiter corresponding to the error rate (Lower) | 60 | 60 |
| 72 | HIST P KEISU | Histocomp level setting P for counter light determination | 20 | 20 |
| 73 | HIST H KEISU | Histocomp level setting H for counter light determination | E0 | E0 |
| 74 | HIST L KEISU | Histocomp level setting L for counter light determination | 90 | 90 |
| 75 | GYAKOU JITEISU | Constant during auto back light response | 08 | 08 |
| 76 | SABUN LIMIT | Limiter for counter light determination | 40 | 40 |
| 77 | FUZZY RULE1 | Correction amount 1 for auto back light | A0 | A0 |
| 78 | FUZZY RULE2 | Correction amount 2 for auto back light | D0 | D0 |
| 79 | FUZZY RULE3 | Correction amount 3 for auto back light | E0 | E0 |
| 7A | FUZZY RULE4 | Correction amount 4 for auto back light | B0 | B0 |
| 7B | FUZZY RULE5 | Correction amount 5 for auto back light | 70 | 70 |
| 7C | FUZZY RULE6 | Correction amount 6 for auto back light | 90 | 90 |
| 7D | FUZZY RULE7 | Correction amount 7 for auto back light | B0 | B0 |
| 7E | FUZZY RULE8 | Correction amount 8 for auto back light | B8 | B8 |
| 7F | FUZZY RULE9 | Correction amount 9 for auto back light | 98 | 98 |
| 80 | FUZZY RULE10 | Correction amount 10 for auto back light | 78 | 78 |
| 81 | IRIS MIN L | Iris limit value (lower) | 42 | 42 |
| 82 | IRIS MIN H | Iris limit value (upper) | 02 | 02 |
| 83 | DELTA SHUT GAIN | Shutter smoothing value setting | 04 | 04 |
| 84 | AE WAKUH | Frame data for AE detection (vertical line) | 0F | 0F |
| 85 | AE WAKUV | Frame data for AE detection (horizontal line) | 4F | 4F |
| 86 | WIDE LIMIT | ZOOM limiter WIDE (lower)<br>Flange back adjustment | DE | |
| 87 | WIDE LIMITH | ZOOM limiter WIDE (upper) | 02 | |
| 88 | TELE LIMIT | ZOOM limiter TELE (lower) | 22 | |
| 89 | TELE LIMITH | ZOOM limiter TELE (upper) | 1D | |
| 8A | STEP ZERO | Flange back value | 90 | |
| 8B | STEP ZERO SPAN | Frange back value 2 | A0 | |
| 8C | ZOOM SPD FAST | Zoom speed (fast) | 73 | 73 |
| 8D | ZOOM SPD SUPER | Zoom speed (For adjustment) | 6A | 6A |
| 8E | ZS INIT SLOW | Zoom speed initial value (slow) | 6A | 6A |
| 8F | ZS INIT FAST | Zoom speed initial value (fast) | 6A | 6A |
| 90 | ZMSPD DAMIN | Zoom speed D/A MIN value | 3D | 3D |
| 91 | ZS K | Zoom servo coefficient K | 11 | 11 |
| 92 | ZS L | Zoom servo coefficient L | 04 | 04 |

Table 7-2 (4).

| Address | Name | Function<br>[ ] Indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 93 | ZP HYS | Zoom potential hysteresis | 03 | 03 |
| 94 | ZOOM SPD SLOW | Zoom speed (slow) | 29 | 29 |
| 95 | AF MD2THL | MODE2 THR | 20 | 20 |
| 96 | MAXCHG THR | MAX value renewal THR | 1A | 1A |
| 97 | ERR THRL | Wobbling width THR | 18 | 18 |
| 98 | WOB INTV | Wobbling second interval | 04 | 04 |
| 99 | ERRPOL THR | MODE2 error possible THR | 13 | 13 |
| 9A | MAXCHK THR | MAX CHECK THR | 12 | 12 |
| 9B | REWOB THR | Wobbling second THR | 0A | 0A |
| 9C | MODE2 INOUT | MODE2 speed switchover | 8B | 8B |
| 9D | SMLWD THR | Small frame THR | 0A | 0A |
| 9E | ZOOM PULSE LIMIT | Maximum zoom pulse value | EE | EE |
| 9F | ZOOM RIZE | Zoom rise minimum speed time | 0A | 0A |
| A0 | FB CURVEPEAKL | Constant for flange back adjustment | F5 | F5 |
| A1 | FB CURVEPEAKH | Constant for flange back adjustment | 0B | 0B |
| A2 | FB ZOOMSL | Constant for flange back adjustment | 02 | 02 |
| A3 | FB ZOOMSH | Constant for flange back adjustment | 07 | 07 |
| A4 | LIMITREST WIDE | Zoom limiter WIDE side | 14 | 14 |
| A5 | LIMITREST TELE | Zoom limiter TELE side | 17 | 17 |
| A6 | FB PEAKTHR | Constant for flange back adjustment | FF | FF |
| A7 | FB ZOOM SLOW | Constant for flange back adjustment | 1C | 1C |
| A8 | DET IRIS ALT | Iris variation check THR | 02 | 02 |
| A9 | DET AGC ALT | AGC variation check THR | 02 | 02 |
| AA | LIMIT INSURANCE | Focus limiter insurance value | 02 | 02 |
| AB | FOCUS MODE | Focus mode<br>Data: Adjustment mode<br>08: Zoom, Focus fixed<br>00: Normal | 00 | 00 |
| AC | LENS ADJ MODE | Flange back adjustment mode<br>Data: Adjustment mode<br>00: Nomal<br>01: Flange back adjustment | 00 | 00 |
| AD | LENS EMRG | Lens emergency | 00 | 00 |
| AE | NTSC PAL/H DEF DELAY | DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay | 21 | 21 |
| AF | FT SW | DDS display mode switchover<br>Data: DDS display mode<br>00: Y sampling display<br>02: R–Y display<br>40: HALL data display<br>82: R ratio display<br>83: B ratio display<br>91: R, B ratio (M) display<br>B0: Focus step display | 00 | 00 |

Table 7-2 (5).

| Address | Name | Function<br>[ ] Indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| B0 | CORE OTHER | CORE MODE DATA 13 byte | 10 | 10 |
| B1 | CORE Y GAIN | CORE FIELD DATA 0 byte | 3A | 3A |
| B2 | E LOW LIGHT START | Low light chroma suppress start point | 30 | 30 |
| B3 | | | | |
| B4 | YAKEI LEVEL | YAKEI mode gain setting value | 40 | 40 |
| B5 | | | | |
| B6 | ZOOM DROP 1 | F-No. dropping (1) by Zoom lens | 60 | 60 |
| B7 | ZOOM DROP 2 | F-No. dropping (2) by Zoom lens | 75 | 75 |
| B8 | | | | |
| B9 | | | | |
| BA | AWB IN B HYS | Hysteresis of AWB indoor BLUE | 04 | 04 |
| BB | AWB IN R HYS | Hysteresis of AWB indoor RED | 02 | 02 |
| BC | AWB KAKE NORM R | ADD: 35 NORM R × 1000H | 20 | 20 |
| BD | AWB KAKE NORM B | ADD: 36 NORM B × 1000H | 20 | 20 |
| BE | MF STEP CHNGE | Coefficent of MODE 2 THR | 46 | 46 |
| BF | MD2 LOWCON SPD | Speed for Low-contrast at MODE 2 | 07 | 07 |
| C0 | MAX CHECK NG CNT | MAX CHECK NG count | 14 | 14 |
| C1 | AF CONTROL FLAG | | 0E | 0E |
| C2 | AE Y THR | Low light AE fluctuation THR 1 | 28 | 28 |
| C3 | AE Y MIN | Low light AE fluctuation THR 2 | 20 | 20 |
| C4 | MD2 SPD | Focus speed at MODE 2 | 61 | 61 |
| C5 | AE CHECK | Re-start up AE THR | 10 | 10 |
| C6 | LOW CON THR | THR 1 for judging Low-contrast at MODE 2 | 10 | 10 |
| C7 | LOW CON THR2 | THR 2 for judging Low-contrast at MODE 2 | 20 | 20 |
| C8~EF | | Not used | | |
| F0 | | Input column of the unit ID No., etc. Not related to unit operations. | FF | |
| F1 | | | FF | |
| F2 | | | FF | |
| F3 | | | FF | |
| F4 | | | FF | |
| F5 | | | FF | |
| F6 | | | FF | |
| F7 | | | FF | |
| F8 | | | FF | |
| F9 | | | FF | |
| FA | | | FF | |
| FB | | | FF | |
| FC | | | FF | |
| FD | | | FF | |
| FE | | | FF | |
| FF | | | FF | |

Table 7-2 (6).

### 7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

**(Example)** The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

#### 1. Page 6

| Address | Adjustment Mode | Data | Function |
|---|---|---|---|
| 00 | Camera adjustment mode | 01<br>10<br>11 | Camera adjustment mode (1), F page write protect released<br>Normal<br>Camera adjustment mode (2), F page write protect released |
| 01 | Camera adjustment switch<br>**Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data. | 00<br>01<br>03<br>05<br>07<br>09<br>0B<br>0D<br>0F<br>11<br>13<br>15<br>17<br><br>1D | Normal<br>IRIS OPEN, AGC HOLD<br>IRIS CLOSE1, AGC HOLD<br>IRIS CLOSE2, AGC MIN<br>IRIS CLOSE3, AGC MAX<br>ND0.5 SHUTTER (PAL=1/160, NTSC=1/190)<br>ND0.8 SHUTTER (PAL=1/320, NTSC=1/380)<br>AWB PRESET1: 3200K PRESET DATA take in<br>WB 3200K PRESET: Indoor white balance mode<br>AWB PRESET2: Preparation of 3200K PRESET DATA take in<br>ZOOM HUNTING1 ZOOM SPDSLOW<br>ZOOM HUNTING2 ZOOM SPDFAST<br>AE FB adjustment mode<br>(IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL))<br>EEPROM PRE WRITE: Page F initial data write |
| 05 | Shutter mode | 00<br>19 | NTSC=1/60, PAL=1/50<br>1/2000 |
| 06 | FOCUS limiter ON/OFF | 00<br>01 | FOCUS limiter ON (Normal)<br>FOCUS limiter OFF |
| 07 | ZOOM limiter ON/OFF | 00<br>01 | ZOOM limiter ON (Normal)<br>ZOOM limiter OFF |
| 08 | ZOOM speed SLOW/FAST | 00<br>01<br>02<br>03 | Normal<br>ZOOM speed SLOW<br>ZOOM speed FAST<br>ZOOM speed SUPER SLOW |
| 09<br>★ | COMPLEATED FLAG | 00<br>01 | Camera Adjustment not completed<br>Camera adjustment completed |
| 11<br>★ | ROM VERSION | 01<br>02<br>03 | Camera micro processor ver1<br>Camera micro processor ver2<br>Camera micro processor ver3 |
| 0C<br>★ | LENS INITIAL END | 00<br>01 | During the initial operation of the lens<br>Lens initial operation completed |

Addresses with ★ are exclusively for reading.

Table 7-3.

### 2. Page 1

| Address | Adjustment Mode | Data | Function |
|---|---|---|---|
| E6 | VH address L | | Title horizontal/vertical position (L) |
| E7 | VH address H | | Title horizontal/vertical position (H) |

Table 7-4.

### 7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-122 board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

| Terminal Number | Signal Name | Terminal Number | Signal Name |
|---|---|---|---|
| 1 | D5V | 2 | NC |
| 3 | NC | 4 | CAM SI |
| 5 | NC | 6 | CAM SO |
| 7 | $\overline{\text{CS OPD}}$ | 8 | $\overline{\text{CAM SCK}}$ |
| 9 | $\overline{\text{CS CORE}}$ | 10 | GND |
| 11 | IRIS OUT | 12 | NC |
| 13 | V SUB CHK | 14 | CAM C |
| 15 | PG CONT | 16 | GND |
| 17 | NC | 18 | CAM Y |

Table 7-5.

### 7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

**Hexadecimal notation-Decimal notation**

②

| The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A (A) | B (b) | C (c) | D (d) | E (E) | F (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| **1** | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| **2** | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| **3** | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
| **4** | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| **5** | 80 | 80 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| **6** | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| **7** | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| **8** | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| **9** | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 |
| **A (A)** | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 |
| ① → **B (b)** | 176 | 177 | 178 | 179 | 180 | 180 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 |
| **C (c)** | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| **D (d)** | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 |
| **E (E)** | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| **F (F)** | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 |

**Note:** ( ) indicate the adjusting remote control unit display.

**(Example)** In the case that the DDS display and the adjusting remote control unit display are BD ( b d ).
As the upper digit of the hexadecimal notation is B ( b ), and the lower digit is D ( d ), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

## 7-2. CAMERA SYSTEM ADJUSTMENT

### 1. Power Supply Voltage Check (DD-48 board)

| Subject | Option |
|---|---|
| Measuring instrument | Digital voltmeter |
| D5V check | |
| Measurement point | Pins ⑤ and ⑧ of CN901 |
| Specified value | 4.92 ± 0.15 Vdc |
| D4V check | |
| Measurement point | Pin ④ of CN901 |
| Specified value | 3.98 ± 0.15 Vdc |
| CAM 5V check | |
| Measurement point | Pins ⑦ and ⑩ of CN901 |
| Specified value | $4.86 \, {}^{+0.15}_{-0.11}$ Vdc |
| CAM 15V check | |
| Measurement point | Pin ⑫ of CN901 |
| Specified value | 15.05 ± 0.4 Vdc |
| CAM –9V check | |
| Measurement point | Pin ⑨ of CN901 |
| Specified value | –8.5 ± 0.4 Vdc |

Checking method:

1) Check that each power supply voltage satisfies the specified value.

### 2. Page F Data Initialization

**Note:** It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 09 is 00.
(Display indicating that page F data can be initialized)
2) Check that the data of page: 6, address: 01 is 00.
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Page F data initialization execution.
The data of all addresses of page F will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
(Displays that the initialization of page F data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
(Releases the page F data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

### 3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

**Note:** When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

| Address | Data |
|---|---|
| 00 (ID) | 3E |
| 0A (LOW LIGHT CS) | C0 |
| 11 (CORE EFFECT) | A0 |
| 12 (CORE MAT R) | 24 |
| 14 (CORE BURST LEVEL) | 38 |
| 15 (CORE CHROMA DLY) | 02 |
| 17 (CORE VHAPCN) | 17 |
| 5C (AWB DELAY TM) | 0C |
| 68 (AE FUNCTION) | 02 |
| 6A (JITEISU DOWN) | 28 |
| 6B (JITEISU UP) | 0D |
| 8C (ZOOM SPD FAST) | 73 |
| 8D (ZOOM SPD SUPER) | 6A |
| 8E (ZS INIT SLOW) | 6A |
| 8F (ZS INIT FAST) | 6A |
| 94 (ZOOM SPD SLOW) | 29 |
| 9E (ZOOM PULSE UNIT) | EE |
| A2 (FB ZOOM SL) | 02 |
| A3 (FB ZOOM SH) | 07 |
| AE (NTSC PAL/H DEF DELAY) | 21 |
| B0 (CORE OTHER) | 10 |
| B1 (CORE Y GAIN) | 3A |
| B2 (E LOW LIGHT START) | 30 |
| C0 (MAX CHK NGCNT) | 14 |

### [Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

| Version | Part Name | Page: 6 Address: 11 |
|---|---|---|
| Ver.2 | CXP80624-424R | 02 |
| Ver.3 | CXP80624-434R | 03 |

### 4. 28 MHz Original Oscillation Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑰ of IC706 (14 MHz) |
| Measuring Instrument | Frequency counter |
| Adjusting Element | CT801 |
| Specified Value | 14187500 ± 71 Hz |

Adjusting method:

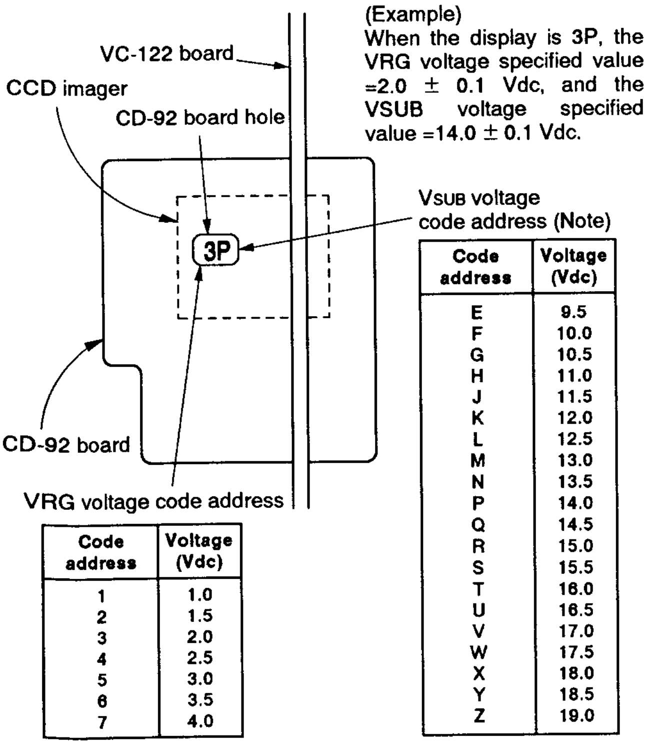
1) Use CT801 to adjust the oscillation frequency to 14187500 ± 71 Hz.

### 5. V SUB Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑬ of CN701 (V SUB CHK) |
| Measuring Instrument | Digital voltmeter |
| Adjustment Page | F |
| Adjustment Address | 04 (V SUB) |
| Specified Value | (Imager display voltage) ± 0.1 Vdc |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =14.0 ± 0.1 Vdc.

VRG voltage code address

| Code address | Voltage (Vdc) |
|---|---|
| 1 | 1.0 |
| 2 | 1.5 |
| 3 | 2.0 |
| 4 | 2.5 |
| 5 | 3.0 |
| 6 | 3.5 |
| 7 | 4.0 |

VSUB voltage code address (Note)

| Code address | Voltage (Vdc) |
|---|---|
| E | 9.5 |
| F | 10.0 |
| G | 10.5 |
| H | 11.0 |
| J | 11.5 |
| K | 12.0 |
| L | 12.5 |
| M | 13.0 |
| N | 13.5 |
| P | 14.0 |
| Q | 14.5 |
| R | 15.0 |
| S | 15.5 |
| T | 16.0 |
| U | 16.5 |
| V | 17.0 |
| W | 17.5 |
| X | 18.0 |
| Y | 18.5 |
| Z | 19.0 |

Fig. 7-7.

**Note:** This VSUB voltage code address can not be used for other models.

### 6. VRG Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑮ of CN701 (PG CONT) |
| Measuring Instrument | Digital voltmeter |
| Adjustment Page | F |
| Adjustment Address | 05 (VRG) |
| Specified Value | (Imager display voltage) ± 0.1 Vdc |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

### 7. CCD Imager Correction Data Write

| | |
|---|---|
| Subject | Not required |
| Adjustment Page | F |
| Adjustment | 1D to 2C (CCD-DEFECT) |

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".
In the case of 2 and 3, write the correction data attached to the shield case of VC-122 board to addresses 1D to 2C.
If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   **Note:** To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of VC-122 board.

## 8. HALL Adjustment

| | |
|---|---|
| Subject | Not required |
| Measurement Point | DDS display of EVF or monitor TV |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 08 (HALL GAIN)<br>09 (HALL OFFSET) |
| Specified Value | 31 to 35 during IRIS OPEN<br>B1 to B5 during IRIS CLOSE |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to $W_2$.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and set to $W_1$.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and set to $K_1$.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and set to $K_2$.
12) Convert $W_1$, $W_2$, $K_1$, $K_2$ to decimal notation, and obtain $W_1'$, $W_2'$, $K_1'$, $K_2'$. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate $X_1'$ using the following equations (decimal notation calculation).
    $A' = W_2' + K_1' - W_1' - K_2'$ ……………………Equation 1
    $B' = W_1' - K_1'$ ……………………………Equation 2
    $X_1' = \frac{2048 + (48 \times A') - (16 \times B')}{A'}$ ……………Equation 3
14) Convert $X_1'$ to hexadecimal notation, and obtain $X_1$.
    (Round off to one decimal place)
15) Set data: $X_1$ to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE mode setting)
19) Read the DDS display data, and set to $W_0$. If $W_0$ lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert $W_0$ to hexadecimal notation, and obtain $W_0'$.
21) Calculate $X_2'$ using the following equations (decimal notation calculation).
    $C' = W_0' - B' - 51$ ……………………………Equation 4
    $X_2' = \frac{(128 - B') \times (X_1' - 48) + 48 \times C'}{C'}$ …………Equation 5
    ($X_1'$ and $B'$ are values obtained from equations 2 and3)
22) Convert $X_2'$ to hexadecimal notation and obtain $X_2$.
    (Round off to one decimal place)
23) Set data $X_2$ to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

## 9. Flange Back Adjustment

| | |
|---|---|
| Subject | Chart for flange back adjustment<br>(1998 ± 5mm from the front side of the lens Luminance: 300 ± 50 lux) |
| Measurement Point | Check the operations on the TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 86 (WIDE LIMIT),<br>87 (WIDE LIMIT H),<br>88 (TELE LIMIT),<br>89 (TELE LIMIT H),<br>8A (STEP ZERO),<br>8B (STEP ZERO SPAN) |

Adjusting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
8) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

## 10. Flange Back Check

| | |
|---|---|
| Subject | Siemens star (2m (or 1.4m) from the front of the lens) |
| Measurement Point | DDS display of EVF or TV monitor |
| Measuring Instrument | |
| Specified Value | $D_2=D_1 \pm 5$ |

Checking method:

1) Set data: 01 to page: 6, address: 00. (Camera adjustment mode)
2) Set data: B0 to page: F, address: AF. (Focus step display mode)
3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
4) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image displayed on the monitor TV screen.
5) Turn off the auto-focus.
6) Shoot the Siemens star with the zoom TELE end.
7) Rotate the focus ring, and adjust the focus.
8) Adjust to the zoom WIDE end.
9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as $D_1$.
10) Rotate the focus ring, and adjust the focus.
    Read the focus step value here, and take the value as $D_2$.
11) Check that $D_2=D_1 \pm 5$.

Process after checking

1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

## 11. SYNC Level Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑱ of CN701 (CAM Y) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 06 (VREF-Y) |
| Specified Value | A=150 ± 5 mV |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

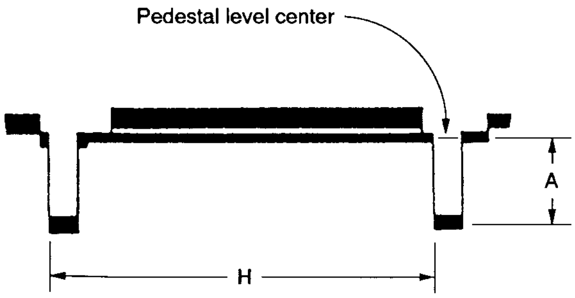


Fig. 7-8.

## 12. BURST Level Adjustment (VC-122 board)

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Pin ⑭ of CN701 (CAM C) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 07 (VREF-C) |
| Specified Value | A=150 ± 5 mVp-p |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

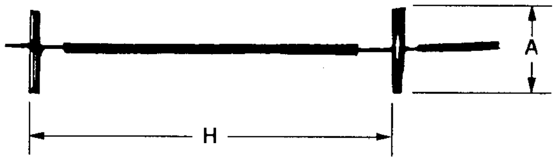


Fig. 7-9.

## 13. A/D Offset Adjustment

| | |
|---|---|
| Subject | Not required |
| Measurement Point | DDS display on the EVF or the TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 0C (AD REF) |
| Specified Value | 46 to 47 |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Turn the main power supply (6.3V) off.

## 14. Carrier Balance Adjustment

| | |
|---|---|
| Subject | Not required |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | F |
| Adjustment Address | 03 (CS SL) |
| Specified Value | The center of the black luminance point should lie within the 1 $\phi$ circle whose center is the principle point. |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

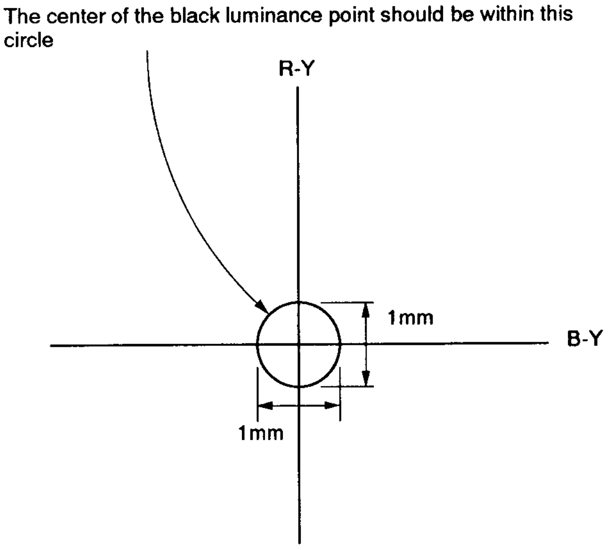

The center of the black luminance point should be within this circle
R-Y
1mm
B-Y
1mm

Fig. 7-10.

### 15. Picture Frame Setting

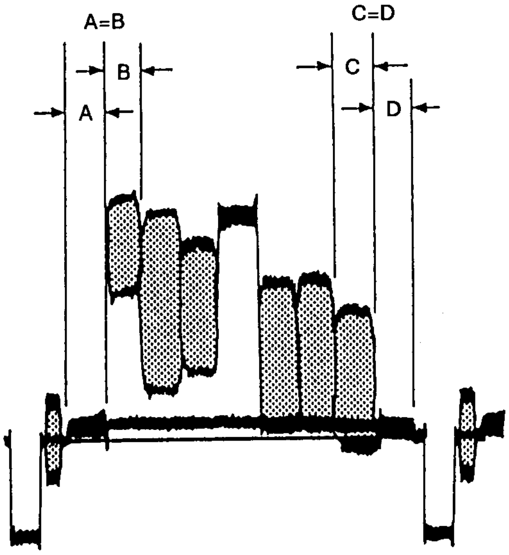
| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Oscilloscope and TV monitor. |
| Specified Value | A=B, C=D, t=0 ± 0.1 msec |

Setting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

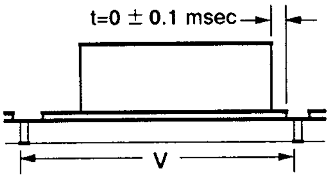


Fig. 7-11.

Check on the TV monitor

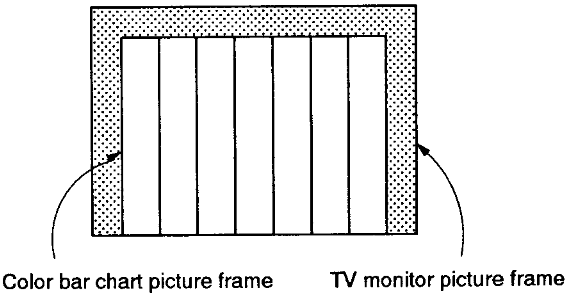

Color bar chart picture frame
TV monitor picture frame

Fig. 7-12.

## 16. IRIS Level Adjustment (VC-122 board)

| Subject | Color bar standard picture frame |
|---|---|
| Measurement Point | Pin ⑪ of CN701 (IRIS OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 63 (AGC MIN) |
| Specified Value | A=200 ± 5 mV |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

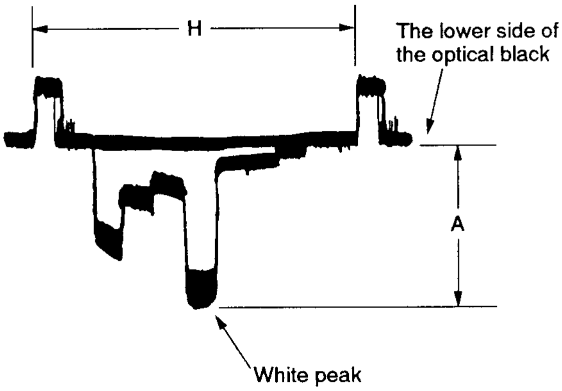


Fig. 7-13.

## 17. MAX GAIN Adjustment (VC-122 board)

| Subject | Color bar standard picture frame |
|---|---|
| Filter | ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet) |
| Measurement Point | Pin ⑱ of CN701 (CAM Y) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | F |
| Adjustment Address | 64 (AE MIN L) |
| Specified Value | A=200 ± 5 mV |

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

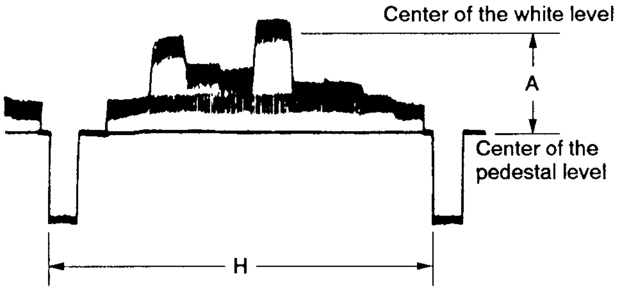


Fig. 7-14.

## 18. IRIS IN/OUT Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Measurement Point | DDS display of the EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 39 (AWB IRIS IN)<br>3A (AWB IRIS OUT) |

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and set to D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

## 19. Pre-white Balance Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | F |
| Adjustment Address | 33 (R CONT REF),<br>34 (B CONT REF) |
| Specified Value | The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point |

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   **Note:** Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

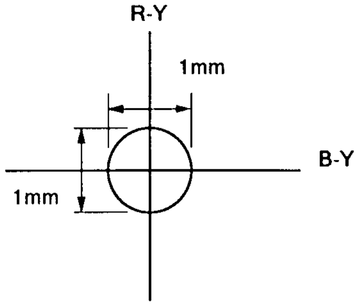


Fig. 7-15.

## 20. Color Reproduction Adjustment

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Adjustment Page | F |
| Adjustment Address | 18 (CORE B–Y GAIN),<br>19 (CORE R–Y GAIN),<br>1A (CORE R–Y HUE),<br>1B (CORE B–Y HUE) |
| Specified Value | All color luminance points should settle within each color reproduction frame. |

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   **Note:** Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

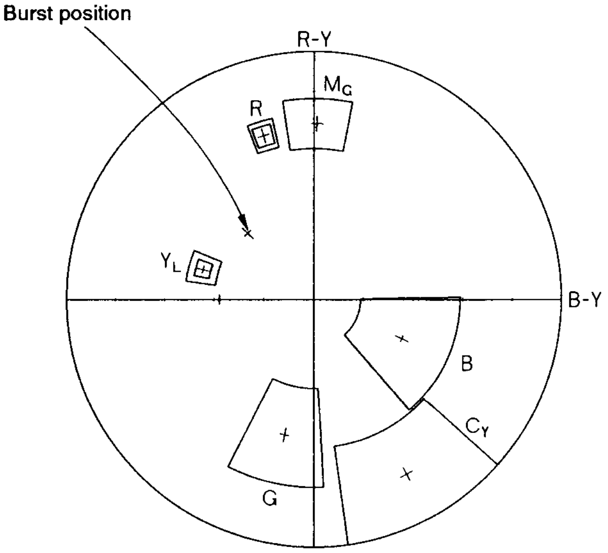


Fig. 7-16.

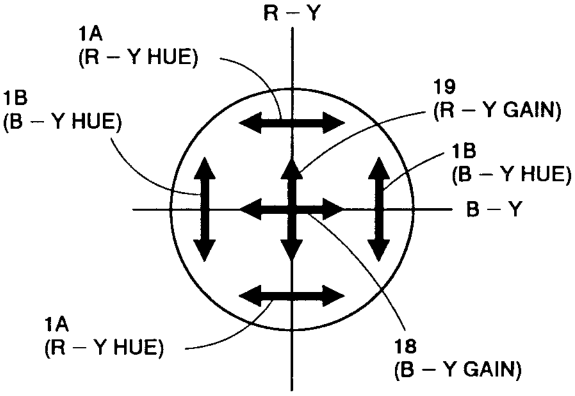


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

## 21. Auto White Balance Preset Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Adjustment Page | F |
| Adjustment Address | 2D (R REF L), 2E (R REF H),<br>2F (G REF L), 30 (G REF H),<br>31 (B REF L), 32 (B REF H) |

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00, and wait at least 2 seconds.
   (Camera adjustment mode 2 setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

## 22. Auto White Balance Adjustment

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | Filter C14 for color temperature correction |
| Measurement Point | Check with the DDS display on the EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 35 (AWB NORM R)<br>36 (AWB NORM B) |
| Specified Value | R ratio 2980 ± 40<br>B ratio 5D80 ± 40 |

**Note:** Check that "Auto White Balance Preset Adjustment" have been completed.

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
4) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2980 ± 40.
6) Press the PAUSE button of the adjusting remote control unit.
7) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5D80 ± 40.
9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

## 23. White Balance Check

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | Filter C14 for color temperature correction<br>ND filter 1.0 and 0.3 |
| Measurement Point | Video output terminal |
| Measuring Instrument | Vectorscope |
| Specified Value | Fig. 7-18. A to C |

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
(Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance high speed tracking mode setting)
7) Set data: 91 to page: F, address: AF (R, B ratio (M) display mode setting), and check that the top 2 digits and bottom 2 digits of the DDS display are 3D to 43. Or check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
(Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
(Auto white balance outdoor mode check)

Processing after completing adjustments

1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

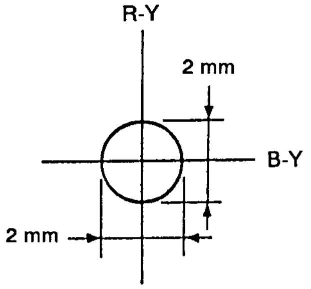


Fig. 7-18. A

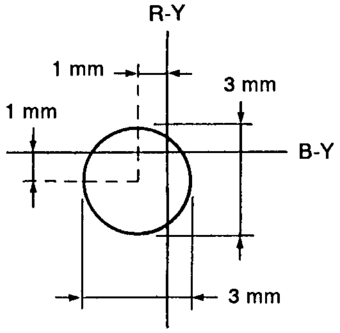


Fig. 7-18. B

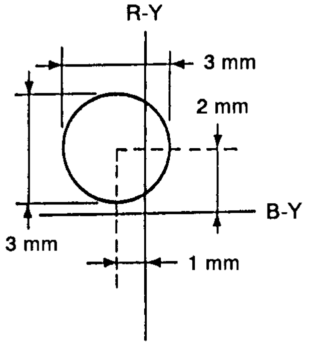


Fig. 7-18. C

## 24. Linear Matrix Adjustment

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Filter | Filter C14 for color temperature correction |
| Measurement Point | DDS display on the EVF or TV monitor |
| Measuring Instrument | |
| Adjustment Page | F |
| Adjustment Address | 3D (DMAT HUE)<br>3E (DMAT GAIN) |

**Note 1:** Check that position that was set in the color bar chart picture frame "15. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Check that the colors on the monitor display at the color modulation stop mode have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (Note 2), and set to $Y_1$.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Select page: F and read the average value of the DDS display data (Note 2), and set to $R_1$.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Select page: F and read the average value of the DDS display data (Note 2), and set to $Y_2$.
12) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
13) Select page: F and read the average value of the DDS display data (Note 2), and set to $R_2$.
14) Convert $Y_1$, $R_1$, $Y_2$, $R_2$ to decimal notation to obtain $Y_1'$, $R_1'$, $Y_2'$ and $R_2'$.
    (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")
15) Calculate $X_1'$ from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
16) Calculate D3D from the following table
    (D3D is hexadecimal notation)

| $X_1'$ value | D3D |
|---|---|
| $-1 \leqq X_1' \leqq 1$ | F0 |
| $X_1' > 1$ | F1 |
| $X_1' < -1$ | FF |

17) Set data: D3D to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
18) Calculate $X_2'$ from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
19) Calculate D3E from the following table.

| $X_2'$ value | D3E |
|---|---|
| $X_2' \geqq 0$ | 00 |
| $0 > X_2' \geqq -1$ | 01 |
| $-1 > X_2'$ | 02 |

20) Set data: D3E to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 38 to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

**Note 2:** As the R-Y data and B-Y data are displayed alternatively, it will be difficult to read the R-Y data. Record this data on a tape, and perform frame advancing playback so that only the R-Y data is read.
(Example)
If the frame advancing playback is performed, the following will be displayed.
$\underline{81} \rightarrow 7A \rightarrow \underline{82} \rightarrow 7A \rightarrow \underline{80} \rightarrow 7A \rightarrow \underline{81} \rightarrow 7C \rightarrow \underline{81} \rightarrow 79$
As the R-Y data is above 80, and the B-Y data is below 7F, the data which is underlined is the R-Y data. If the average value is calculated, the R-Y data will become 81.

### 25. VIDEO OUT Level Check

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminal<br>(Terminated at 75 Ω ) |
| Measuring Instrument | Oscilloscope |
| Specified Value | Y level=680 ± 40 mV<br>SYNC level=300 ± 20 mV<br>BURST level=300 ± 30 mVp-p |

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

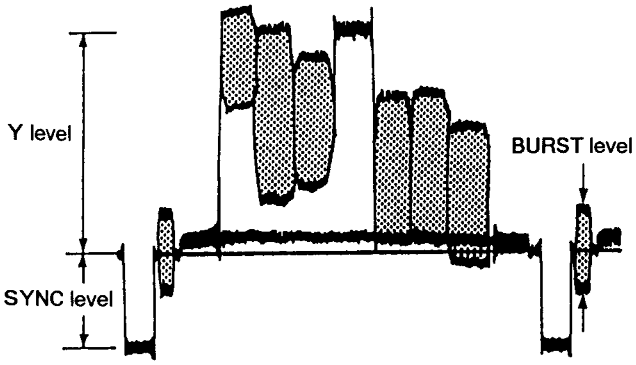


Fig. 7-19.

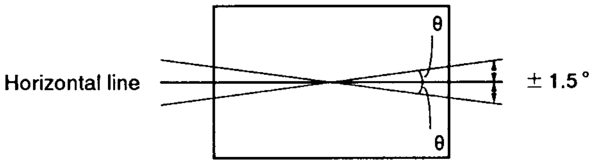
## 7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

### 7-3-1. Horizontal Slant Adjustment

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Monoscope section |
| Specified Value | Refer to Fig. 7-21. |

Adjusting method:

1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
   (Do not tighten it too tightly.)


θ
Horizontal line
± 1.5 °
θ

Specified value: The image should be within ± 1.5 ° of the horizontal line.

Fig. 7-21.

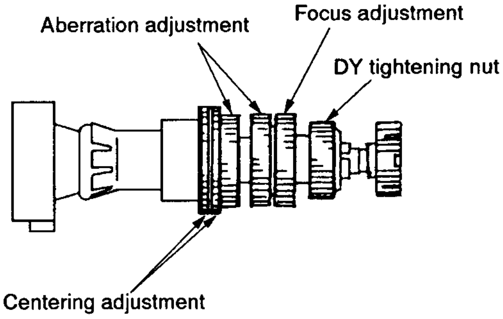

Aberration adjustment
Focus adjustment
DY tightening nut
Centering adjustment

Fig. 7-22.

### 7-3-2. Centering Adjustment

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Monoscope section |
| Specified Value | Refer to Fig. 7-23. |

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)

   **Note:** As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

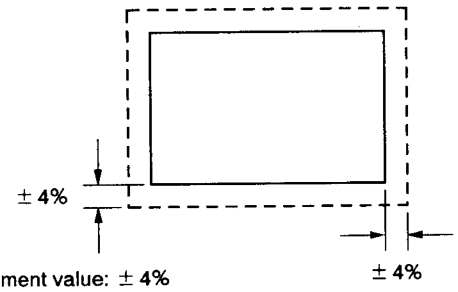


Fig. 7-23.

### 7-3-3. Focus Adjustment

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Monoscope section |

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

### 7-3-4. Aberration Adjustment

| Model | E-E |
|---|---|
| Signal | Dot pattern |
| Specified Value | Refer to Fig. 7-24. |

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

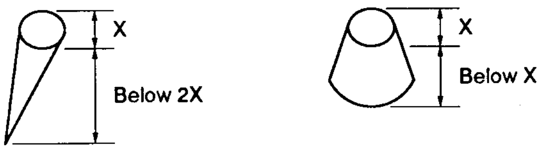


Fig. 7-24.

### 7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

| Model | Playback |
|---|---|
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP) |
| Measurement Point | Positive pole terminal of C516 |
| Measuring Instrument | Digital voltmeter or oscilloscope (DC range) |
| Adjustment Element | RV501 |
| Specified Value | 2.60 ± 0.05 Vdc |

Adjusting method:

1) Adjust to 2.60 ± 0.05 Vdc using RV501.

### 7-3-6. Horizontal Amplitude Adjustment (VF-42 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Monoscope section |
| Adjusting Element | C504 |
| Specified Value | 6 ± 2% |

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

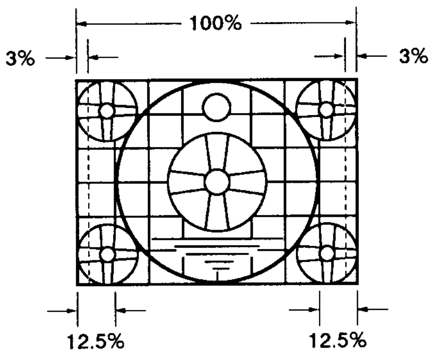
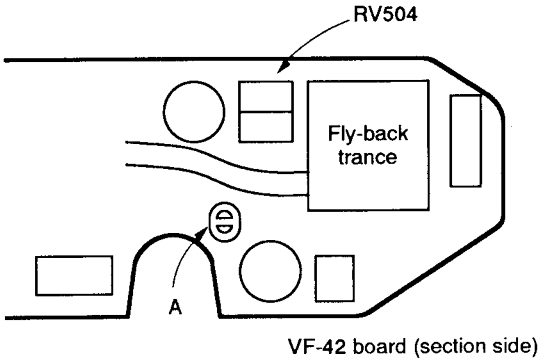


Fig. 7-25.



| Section A | Size H |
|---|---|
| Open | Small |
| Short | Big |

Fig. 7-26.

### 7-3-7. Vertical Amplitude Adjustment (VF-42 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Monoscope section |
| Adjusting Element | RV502 |
| Specified Value | 5 ± 2% |

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

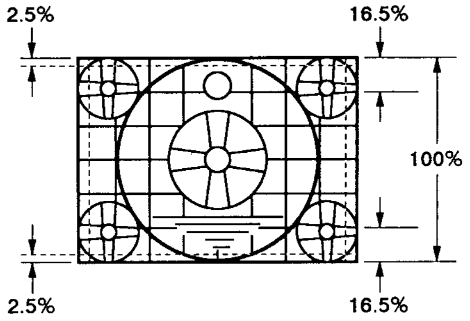


Fig. 7-27.

### 7-3-8. Brightness, Contrast Adjustments (VF-42 board)

| | |
|---|---|
| Model | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Monoscope section |
| Adjusting Element | Brightness: RV504<br>Contrast: RV503 |

Adjusting method:

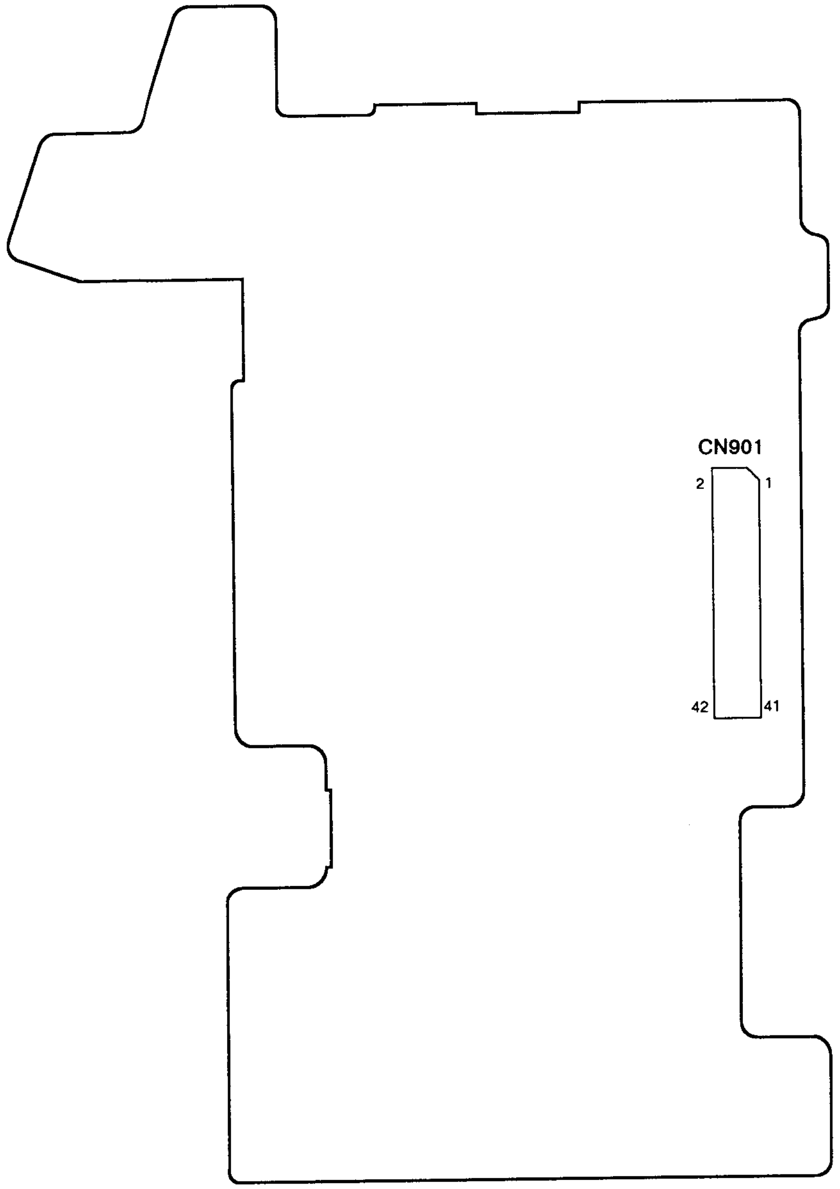
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

### 7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

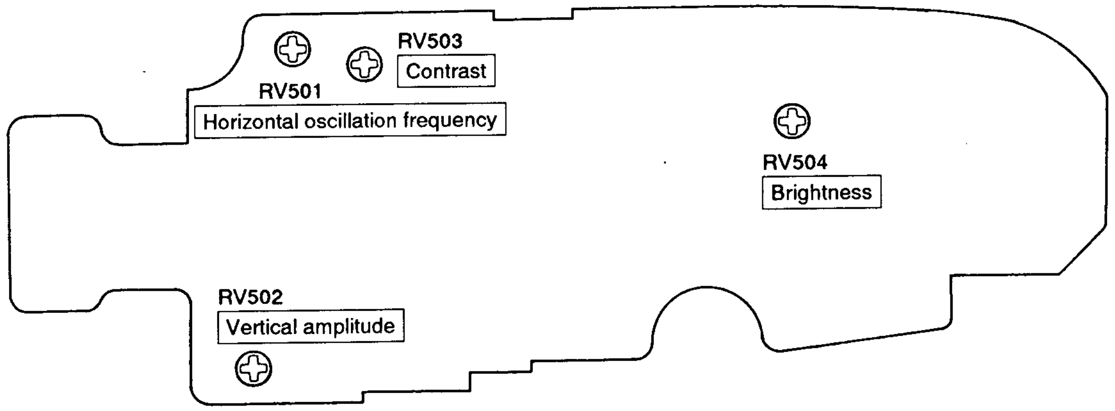
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

## 7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

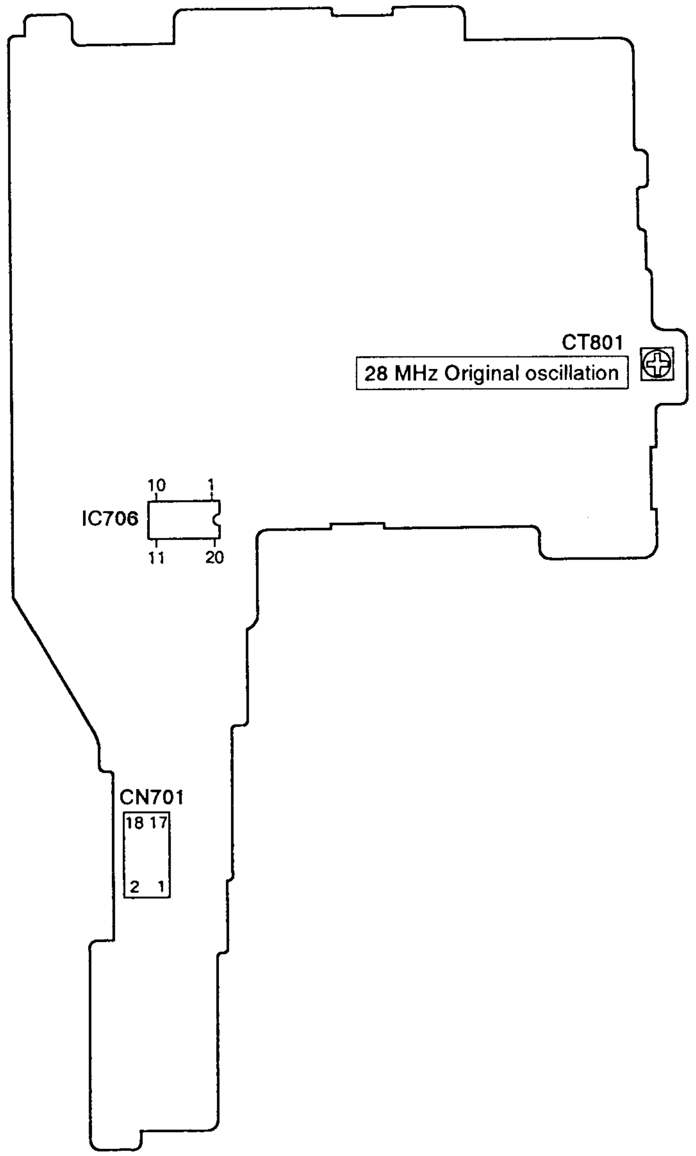
### DD-48 BOARD (COMPONENT SIDE)


CN901
2
1
42
41

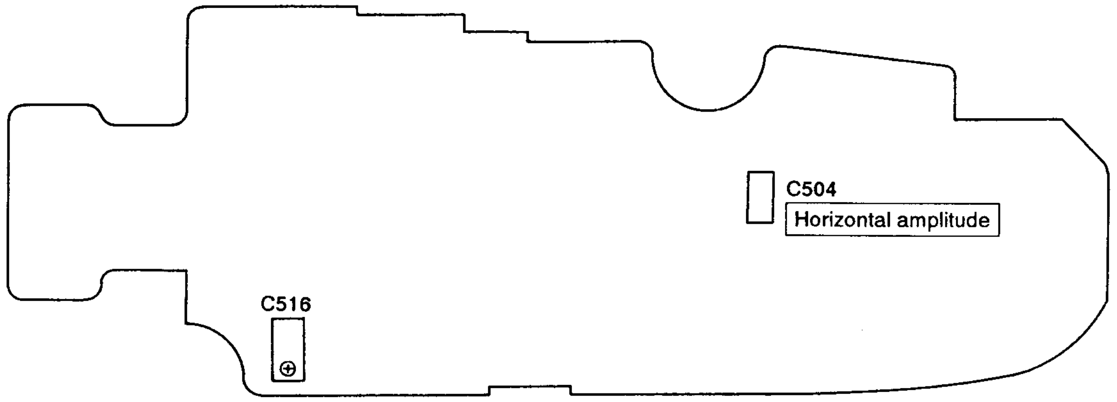
### VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

### VC-122 BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
10
1
IC706
11
20
CN701
18 17
2 1

### VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

# SECTION 8
# MECHANICAL SECTION ADJUSTMENTS

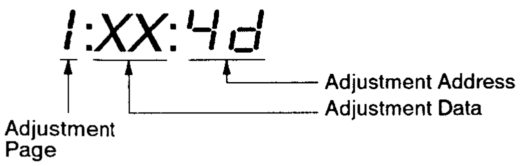
**For Mechanical Adjustments**
Refer to the separate volume of mechanical adjustment "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV (A Mechanism)" for the adjustments and checks of mechanism section and the mechanical parts replacement. (9-973-199-11)
For setting of the track shift mode, however, refer to the following.

## 8-1. SETTING THE TRACK SHIFT MODE

**Note:** Camera part and video part should have been installed.

**[Setting Method]**

1) Set the adjustment commander to the HOLD ON side.
2) Set page: 1, address: 01 and data: 01, and then release the protector.
3) Set page: D and address: 01.
4) Set adjustment data to 03 (test mode 3) by PLAY or STOP button.
   (When HOLD OFF once after the setting and HOLD ON again, the display of the address data will be changed. To set the another mode with shifting, repeat the procedures from 3).)
5) Set to the HOLD OFF side in order to set the normal mode.



## 8-2. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller.)
2) Connect to the oscilloscope.
   CH1: VS-95 board CN002 pin ③ (PB RF)
   CH2: VS-95 board CN002 pin ④ (SWP)
3) Play back the tracking alignment tape (WR5-1CP: 8-967-995-07).
4) Check that the RF waveform of the oscilloscope is flat at both inlet and outlet side. (Refer to Fig. 8-1 and 8-2)
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment IV (A Mechanism).

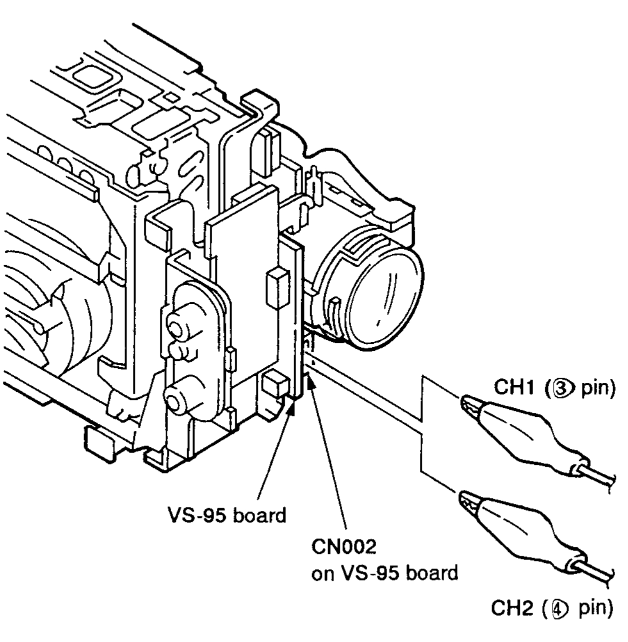


Fig.8-1.

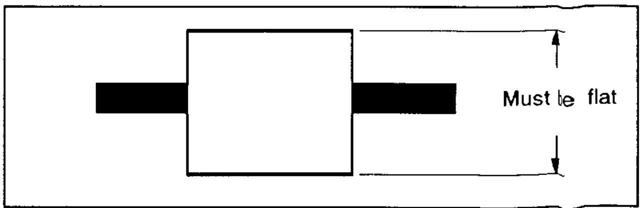


Fig.8-2.

# SECTION 9

# VIDEO SECTION ADJUSTMENT

**When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 232.**

## 9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

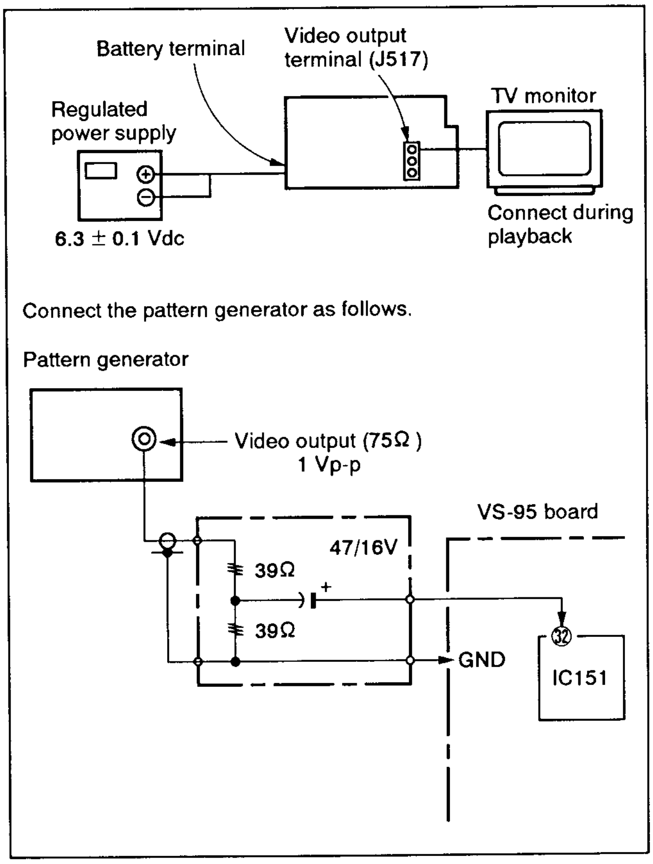
### 9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-6C)
    Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)[Note 1]
    Part Code: 8-967-995-56
    (WR5-5CSP)[Note 2]
    Part Code: 8-967-995-47
    **Note:** The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
12) Remote control unit for adjustment (J-6082-053-B)
13) DD-48 board extension cord (42P, 0.8 mm)
    Part Code: J-6082-195-A
14) AU-138 board, Cabinet (R) extension cord (20P, 0.8 mm)
    Part Code: J-6082-196-A
15) Mecha deck extension cord (30P, 0.8 mm)
    Part Code: J-6082-167-A

### 9-1-2. Connecting the equipments

Unless specified otherwise, connect the measuring instruments as shown in Fig. 9-1 and perform the adjustments.

- Camera/player power switch ········Position of the player
- Connect the adjusting remote control unit to the remote terminal (DD-48 board CN902).


Battery terminal
Video output terminal (J517)
Regulated power supply
TV monitor
6.3 ± 0.1 Vdc
Connect during playback
Pattern generator
Video output (75Ω ) 1 Vp-p
VS-95 board
47/16V
39Ω
39Ω
GND
32
IC151

Connect the pattern generator as follows.

Fig. 9-1.

### 9-1-3. How to Set the REC Mode

1. REC key forbidden accept mode cancel
    1. Connect the adjustment remote controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on the HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to 8F [AF].[Note 1] (REC key forbidden accept mode cancel)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2. REC mode setting
    1. Connect the collector of Q200 on the VS-95 board and GND with a jumper wire. (CCD delay (IC154) active mode setting)
    2. Turn on the HOLD switch of the adjustment remote controller.
    3. Select the page: 1 address: A3, and set data to 01.
    4. Select the page: 1 address: 0B, and set data to C8. (Line input mode setting)
    5. Turn off the HOLD switch of the adjustment remote controller.
    6. Press REC buttons of the adjustment remote controller.
    7. Remove the jumper wire and perform "3. Procedure after completed the adjustment", after completing adjustment.

3. Procedure after completed the adjustment

    Be sure to return the mode to REC key forbidden accept mode after adjustment.
    1. Connect the adjustment remoter controller to the REMOTE terminal.
    2. Turn on the power.
    3. Turn on HOLD switch of the adjustment remote controller.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 02, and set the data to 8E [AE].[Note 1] (Setting of the REC key forbidden accept mode)
    6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

**Note 1:** No mark : AEP, UK model
[ ] : E, Australian model

### 9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.
Remove the following connector when removing the EVF section.

1. VS-95 board CN102 (6 PIN)

The front panel section assembly is required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. AU-138 board CN601 (5 PIN)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-196-A) when adjusting the video section.

### 9-1-5. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ㉜ of IC151 on the VS-95 board, and check that the amplitude of the sync signal of the video signal is approximately 0.15V, the amplitude of the video section is approximately 0.35V, the amplitude of the burst signal is approximately 0.15V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-2.

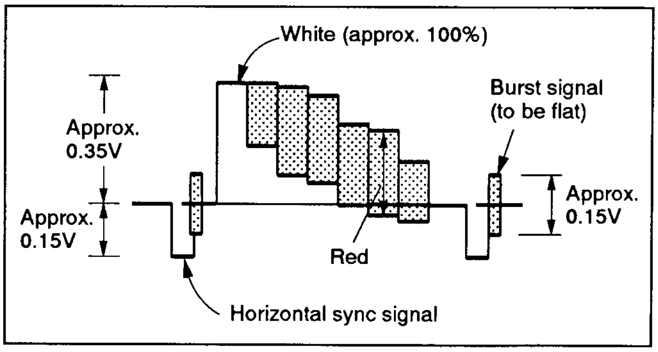


Fig. 9-2. Color Bar Signal of the Pattern Generator

### 9-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

| Name | Record -ing mode | Tape type | Tape speed | Recording contents | | Usage |
|---|---|---|---|---|---|---|
| | | | | Video area | PCM area | |
| Tracking<br>WR5-1CP | L | MP | SP | CH2: Signal for 1 MHz tape path adjustment | | Tape path adjustment<br>Switching position adjustment |
| Video frequency characteristics<br>WR5-6C | L | MP | LP | RF sweep 0 to 10 MHz<br>Marker<br>1, 3.58, 5.5, 7 MHz | | Frequency characteristics adjustment |
| Operation check (SP mode)<br>WR5-5CSP | L | MP | SP | • Video signal<br>Color bar 4 minutes<br>Monoscope 4 minutes<br>• Audio signal (AFM)<br>400 Hz 60% modulation | • Audio signal (PCM)<br>Monoscope section<br>20 Hz 20 sec. } Color bar section<br>400 Hz 20 sec. }<br>14 kHz 20 sec. }<br>Repeated 4 times<br>1 kHz 4 minutes | Checking operations |
| Operation check (LP mode)<br>WR5-4CL | L | MP | LP | • Video signal<br>Color bar 4 minutes<br>Monoscope 4 minutes<br>• Audio signal (AFM)<br>400 Hz 60% modulation | | |

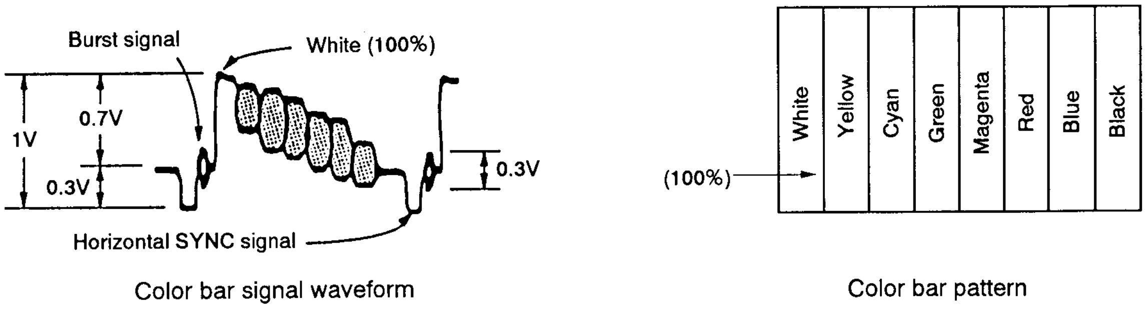
**Note:** Recording mode
L ······· Conventional mode
E ······· hi8 (hi band) mode

Tape type
MP····· Particle type metal tape
ME····· Evaporated type metal tape

Table 9-1.

Fig. 9-3. shows the 75% color bar signals recorded on the alignment tape.

**Note:** Measure using the video input/output terminal (Terminated at 75 Ω )



Color bar signal waveform

Color bar pattern

Fig. 9-3. Color Bar Signals of the Alignment Tape

### 9-1-7. Output Level and Impedance

Video outputPin jack
Output signal: 1 Vp-p, 75 unbalanced, sync negative

Audio outputPin jack
Specified output: –7.5 dBs
Output impedance: Below 2.2 kΩ

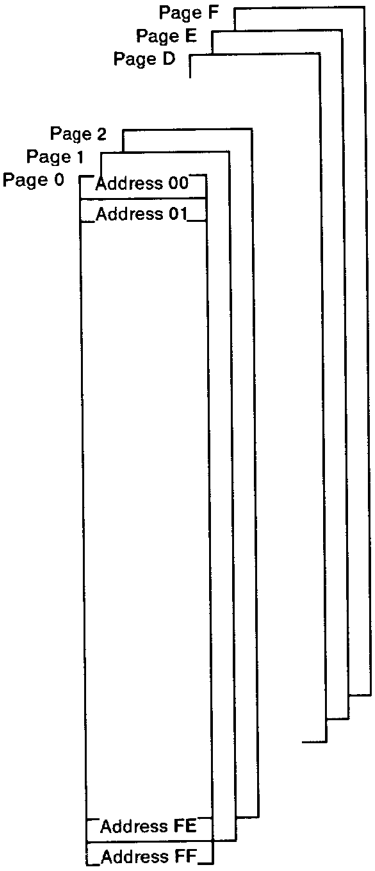
## 9-1-8. Service Mode

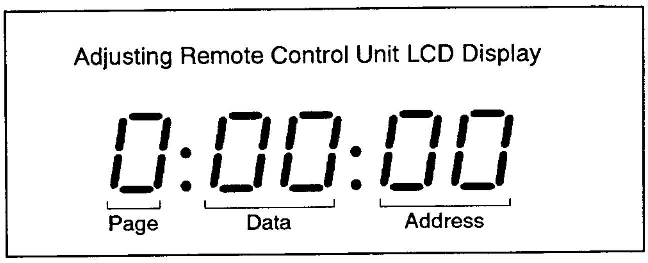
### 1. Setting the Service mode

The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

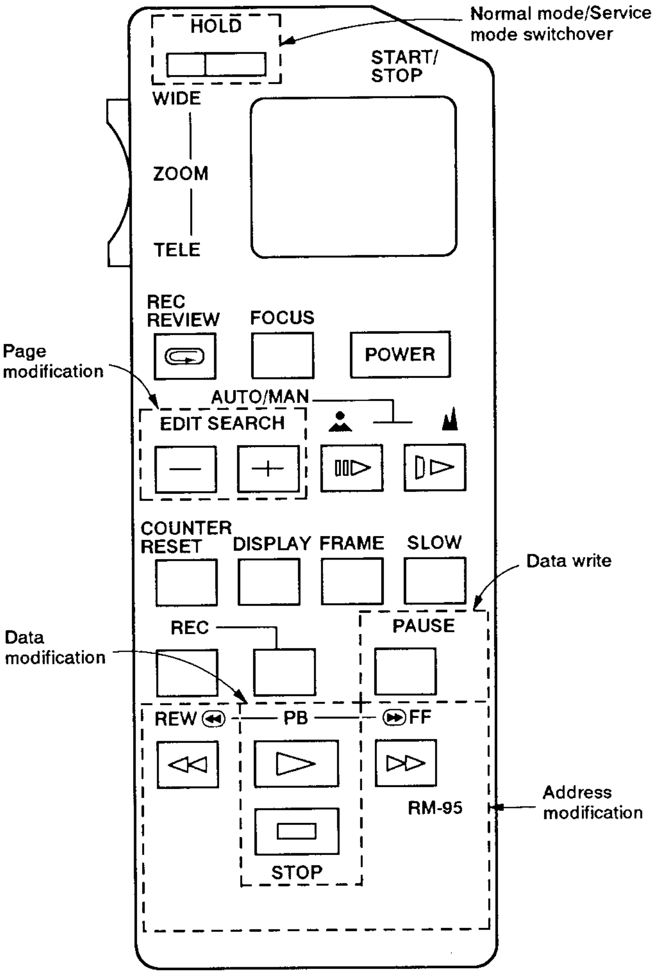
The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

(1) Service LANC memory map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

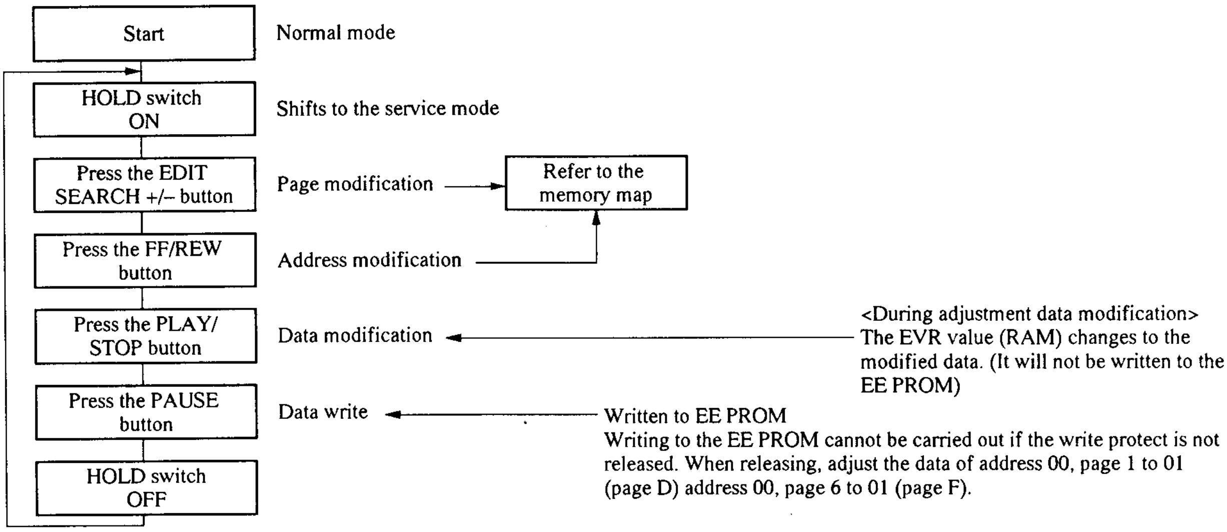

Adjusting Remote Control Unit LCD Display
0:00:00
Page
Data
Address

Adjusting remote control unit RM-95 (J-6082-053-B)


HOLD
Normal mode/Service mode switchover
START/ STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
REC
PAUSE
Data modification
REW
PB
FF
RM-95
Address modification
STOP

| Page | Page allocation | Description |
|---|---|---|
| 0 | Not used | |
| 1 | Mode Control RAM, I/O | RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM. |
| 2~4 | Mechanical Control RAM, I/O | RAM and I/O memory area of the mechanical controller. |
| 5 | Not used | |
| 6~8 | Camera Control RAM, I/O | RAM and I/O memory area of the camera control. |
| 9 | Not used | |
| A | Camera Control RAM, I/O | RAM and I/O memory area of the camera control. |
| B, C | Not used | |
| D | VTR EE-PROM | ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data. |
| E | Not used | |
| F | Camera EE-PROM | ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is turned off. |

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01 (page D) address 00, page 6 to 01 (page F).

| **Command Name** | **Command Function** | **Normal LANC command** |
|---|---|---|
| Page Up | Page +1 | Edit Search + |
| Page Down | Page –1 | Edit Search – |
| Direc Page Set | Sets the specified page | Event Clear |
| Address Up | Address +1 | Fast Forward |
| Address Down | Address –1 | Rewind |
| Data Up | Data +1 | Play Back |
| Data Down | Data –1 | Stop |
| Store | Write the data to the EE PROM. RAM | Pause |

## 2. Types of Self-diagnostic Feature

| MODE | | Contents |
|---|---|---|
| TEST | Camera adjustment | Refer to Camera Adjustment |
| | Switching position adjustment | Refer to each adjustment page |
| | Battery DOWN adjustment | |
| | Video, Audio adjustment | |
| ADJUST | Pass Adjustment track shift | When adjusting tape pass, set this mode and shift the tracking. |
| | Emergency STOP inhibition | Detection of emergency is inhibited. This allows the following items.<br>• Power is not turned off when the battery is ended.<br>• SP/LP is not automatically distinguished.<br>• Emergence is not detected except for TOP/END detection of the TAPE. |
| | Read of emergence code | The following functions are added to the emergency display function currently in use.<br>① The lithium battery is not required because to memorize into EE-PROM is allowed.<br>② The first emergency and the last emergency are memorized.<br>③ The mode when the emergency is generated is memorized, in addition to the emergency contents. |
| | Motor single check | Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled.<br>• Drum motor<br>• Capstan motor<br>• Loading motor |
| | Function switch check | The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit. |
| | Mechanical switch check | The contents of the mechanical switch and the mode switch can be confirmed. |
| | Sensor check | The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed.<br>TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor. |
| | Reception contents check of wireless remote control | The received code contents of the remote control code can be confirmed. |

## 3. Page D Write Protect

Release/set the page D write protect.

| | |
|---|---|
| Page 1 | Address 00 |

| Data | Function |
|---|---|
| 00 | Normal (Write protect condition) |
| 01 | Write protect release |

## 4. Page F Write Protect

Release/set the page F write protect.

| | |
|---|---|
| Page 6 | Address 00 |

| Data | Function |
|---|---|
| 10 | Normal (Write protect condition) |
| 01 | Write protect release |

### 5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

| Page D | Address 01 |
|---|---|

| Data | Function |
|---|---|
| 00 | Normal |
| 01 | Test mode 1<br>Various emergency inhibition and release<br>Drum, capstan, loading motor, reel, tape top, end, DEW<br>SP/LP automatic distinction inhibition, manual switchover<br>5 minutes pause release inhibition<br>Power off inhibition • release by battery end |
| 02 | Test mode 2<br>1'CH frequency response adjustment (Not used)<br>SP/LP automatic distinction inhibition, manual switchover |
| 03 | Test mode 3<br>Track shift<br>Plays back the track shift<br>Rear lock distinction inhibition during PB<br>SP/LP automatic distinction inhibition, manual switchover |
| 04 | Test mode 4<br>Rear lock mode<br>Rear lock playback is performed<br>SP/LP automatic distinction inhibition, manual switchover |
| 05 | Test mode 5<br>SP/LP automatic distinction inhibition, manual switchover |

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

### 6. Emergency code

Troubles (errors) can be checked.

| Page D | Address 06 |
|---|---|

First emergency code

……The first error code generated

| Page D | Address 07 |
|---|---|

Last emergency code

…… The last error code generated (this data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

| Code | Error condition |
|---|---|
| 00 | No error |
| 01 | Loading motor error |
| 02 | Reel error during unloading |
| 03 | Other reel errors |
| 04 | Capstan error |
| 05 | DRUM FG error during drum start up |
| 06 | DRUM PG error during drum start up |
| 07 | DRUM FG error during drum regular condition |
| 08 | DRUM PG error during drum regular condition |
| 09 | DRUM Phase error during drum regular |

### 7. Emergency mode

The operation mode during an error outbreak can be checked.

| | |
|---|---|
| Page D | Address 08 |

First emergency mode
……The operation mode when the first error is generated

| | |
|---|---|
| Page D | Address 09 |

Last emergency mode
……The operation mode when the last error is generated
(This data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.

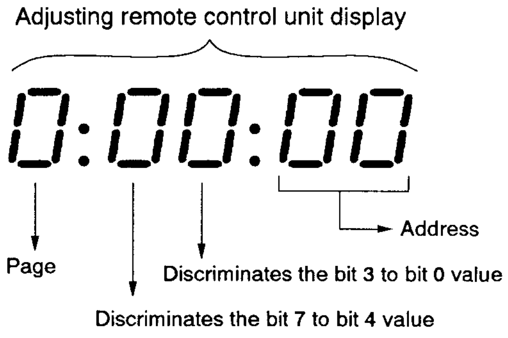
※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.

※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

| Code | Error condition |
|---|---|
| 00 | BEFOR INITIALIZE |
| 01 | EJECTED |
| 02 | NORMAL STOP |
| 03 | FF |
| 04 | NORMAL REC |
| 06 | NORMAL PB |
| 07 | PB PAUSE |
| 12 | LOADING |
| 14 | REC PAUSE |
| 26 | X1 |
| 27 | 1/5 SLOW |
| 31 | UNLOADING |
| 36 | -X1 |
| 37 | -1/5 SLOW |
| 46 | CUE |
| 47 | 1/10 SLOW |
| 56 | REVIEW |
| 57 | -1/10 SLOW |
| 62 | STOP TAPE END |
| 66 | X2 |
| 67 | FRAME |
| 72 | STOP TAPE TOP |
| 76 | -X2 |
| 77 | -FRAME |
| 83 | REWIND |
| 85 | REC REVIEW(+) |
| 95 | REC REVIEW(-) |
| A2 | EMERGENCY STOP |
| A5 | EDIT SEARCH(+) |
| B1 | EMERGENCY UNLOADING |
| B2 | STOP EMERGENCY 1 |
| B5 | EDIT SEARCH(-) |
| C2 | STOP EMERGENCY 2 |
| E2 | STOP NO CASSETTE |
| F5 | EDIT PAUSE |

### 8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.


Adjusting remote control unit display
0:00:00
Address
Page
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

| | Remote Control Unit Display | Bit Value | | | |
|---|---|---|---|---|---|
| | | bit 3 or bit 7 | bit 2 or bit 6 | bit 1 or bit 5 | bit 0 or bit 4 |
| | 0 | 0 | 0 | 0 | 0 |
| | 1 | 0 | 0 | 0 | 1 |
| | 2 | 0 | 0 | 1 | 0 |
| | 3 | 0 | 0 | 1 | 1 |
| | 4 | 0 | 1 | 0 | 0 |
| | 5 | 0 | 1 | 0 | 1 |
| | 6 | 0 | 1 | 1 | 0 |
| | 7 | 0 | 1 | 1 | 1 |
| Ⓐ→ | 8 | 1 | 0 | 0 | 0 |
| | 9 | 1 | 0 | 0 | 1 |
| | A ( A ) | 1 | 0 | 1 | 0 |
| | B ( b ) | 1 | 0 | 1 | 1 |
| | C ( c ) | 1 | 1 | 0 | 0 |
| | D ( d ) | 1 | 1 | 0 | 1 |
| Ⓑ→ | E ( E ) | 1 | 1 | 1 | 0 |
| | F ( F ) | 1 | 1 | 1 | 1 |

**(Example)** When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

### 9. Check of Tape Distinction Switch, etc.

| | |
|---|---|
| Page 2 | Address E9 |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| | | | $\overline{\text{CC DOWN}}$ | $\overline{\text{REC PROOF}}$ | ME/$\overline{\text{MP}}$ | | |

"1"=ME tape
"0"=MP tape

"1"=Recording impossible
"0"=Recording possible

"0"=During cassette compartment lock

| | |
|---|---|
| Page 1 | Address 3D |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| V MUTE | A MUTE | VA PB MODE | JOG | PB CLOG | REC CLOG | SYNC DET | LP/$\overline{\text{SP}}$ |

"1"=LP mode playback
"0"=SP mode playback

"1"=SYNC is detected
"0"=SYNC is not detected

"1"=CLOG is detected
"0"=Normal

"1"=When the PB RF signals are being playback normaly
"0"=Others

"1"=JOG mode
"0"=Other

"1"=Playback mode
"0"=Others

"1"=AUDIO MUTE: ON
"0"=AUDIO MUTE: OFF

"1"=VIDEO MUTE: ON
"0"=VIDEO MUTE: OFF

| | |
|---|---|
| Page 1 | Address 42 |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| | | | | | | DEW | |

"0"=Dew outbreak
"1"=Others

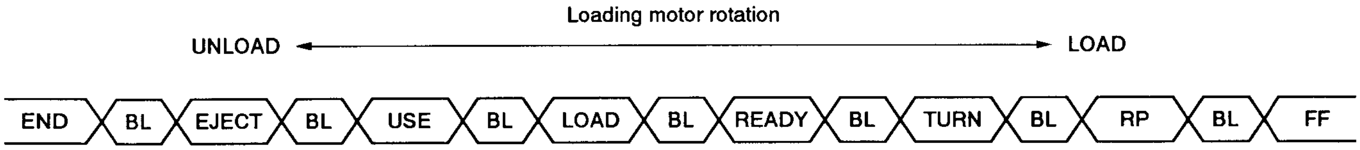
## 10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

| | |
|---|---|
| Page 2 | Address E9 |

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| MSW 0 | MSW 1 | MSW 2 | $\overline{\text{CC DOWN}}$ | | | | |

| | | | **POSITION** | **FUNCTION** | **$\overline{\text{CC DOWN}}$** |
|---|---|---|---|---|---|
| 1 | 1 | 1 | BL | Interval of each position | |
| 0 | 1 | 1 | END | FULL END processing (T side lock removal) | 1 |
| 0 | 0 | 1 | EJECT | Cassette compartment ejection | 1 |
| 1 | 0 | 1 | USE | EJECTED (Unskate end) | 1 |
| 0 | 0 | 1 | LOAD | LOADING (Skate in) | 0 |
| 1 | 0 | 0 | READY | NORMAL STOP position | 0 |
| 1 | 1 | 0 | TURN | OFF of pinch roller only with PB ↔ REV (oscillating position) | 0 |
| 0 | 1 | 0 | RP | PB, REC, RVS, REV, REW | 0 |
| 0 | 0 | 0 | FF | FF/CUE | 0 |


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

## 11. Mechanism Control A/D Port Input Voltage Check

| Page 4 | Address 14 |
|---|---|

Checking method:

1) Set data: 02 to page: 4, address: 0E.
(A/D conversion processing active)
2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

| Data | A/D Port |
|---|---|
| 00 | Pin (62): AN0 (T REEL FG) |
| 01 | Pin (61): AN1 (S REEL FG) |
| 02 | Pin (60): AN2 (ATF ERROR) |
| 03 | Pin (59): AN3 (BATT SENS) |
| 04 | Pin (58): AN4 ($\overline{\text{DEW}}$) |

3) Check the data of page: 4, address: 14.

| Adjusting Remote Control Unit Display Data | A/D Port Input Voltage |
|---|---|
| FF to 00 | Approx. 5 Vdc to 0 Vdc |

## 12. Tape Top/End Sensor Condition Check

| Page 4 | Address 0A |
|---|---|

Checking method:

1) Set data: 10 to page: 4, address: 0E.
(Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

| Adjusting Remote Control Unit Display Data | Tape Top/End Sensor Condition |
|---|---|
| 0 0 | Tape present (Middle of tape) |
| 0 1 | Tape end |
| 1 0 | Tape top |
| 1 1 | No tape |

Tape end sensor condition
Tape top sensor condition

"0"=Non-active (Not receiving light)
"1"=Active (Receiving light)

## 13. Battery Voltage Check

| Page 4 | Address 10 |
|---|---|

| Adjusting Remote Control Unit Display Data | Battery Voltage |
|---|---|
| FF | Approx. 10 Vdc |
| F0 | Approx. 9.4Vdc |
| E0 | Approx. 8.8Vdc |
| D0 | Approx. 8.2Vdc |
| C0 | Approx. 7.5Vdc |
| B0 | Approx. 6.9Vdc |
| A0 | Approx. 6.3Vdc |
| 90 | Approx. 5.6Vdc |
| 80 | Approx. 5.0Vdc |

## 14. Individual Operations of the Drum, Capstan, and Loading Motor

| Page 4 | Address 11 |
|---|---|

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
(Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
5) After checking the operations, turn off the main power (6.3 Vdc).

| Data | Operation |
|---|---|
| 00 | Normal |
| 02 | Drum forward rotation |
| 04 | Drum reverse rotation |
| 06 | Capstan forward rotation |
| 08 | Capstan reverse rotation |
| 0A | Loading motor forward rotation |
| 0C | Loading motor reverse rotation |
| 01 | All motors stop |
| 03 | |
| 05 | |
| 07 | |
| 09 | |
| 0B | |
| 0D | |
| 0F | |

### 15. Mode control micro processor key matrix check

The key input can be checked.

| Page 1 | Address 68~6D |
|---|---|

| | Bit7 | Bit6<br>(K IN 6) | Bit5<br>(K IN 5) | Bit4<br>(K IN 4) | Bit3<br>(K IN 3) | Bit2<br>(K IN 2) | Bit1<br>(K IN 1) | Bit0<br>(K IN 0) |
|---|---|---|---|---|---|---|---|---|
| Address 68<br>(K OUT 0) | | LENS COVER OPEN<br>(MF-191 S973) | VTR POWER<br>(VK-27 S977) | EDIT SEARCH<br>(CUE)<br>(VK-27 S981) | PAUSE<br>(VK-27 S984) | EDIT SEARCH<br>(+)<br>(VK-27 S981) | EJECT<br>(DD-48 S901) | |
| Address 69<br>(K OUT 1) | | BUZZER ON/OFF<br>(ED-35 S986) | CAMERA POWER<br>(VK-27 S977<br>SW-205 S519) | FF<br>(VK-27 S983) | PLAY<br>(VK-27 S980) | REW<br>(VK-27 S979) | STOP<br>(VK-27 S976) | |
| Address 6A<br>(K OUT 2) | | NIGHT<br>(CF-32 S997) | | | EDIT SEARCH<br>(REV)<br>(VK-27 S978) | EDIT SEARCH<br>(-)<br>(VK-27 S978) | COUNTER RESET<br>(CF-32 S995) | SP/LP<br>EDIT ON/OFF<br>(ED-35 S990) |
| Address 6B<br>(K OUT 3) | | PORTREIT<br>(CF-32 S997) | | | TIME<br>(CF-32 S996) | DATE<br>(CF-32 S993) | | |
| Address 6C<br>(K OUT 4) | | SPORTS<br>(CF-32 S997) | | AUTO FOCUS ON/OFF<br>(MF-191 S971) | | | | |
| Address 6D<br>(K OUT 5) | | HIGH SPEED SHUTTER<br>(CF-32 S997) | AREA<br>(ED-35 S989) | DST or SUMMER TIME<br>(ED-35 S987) | | FADER<br>(CF-32 S991) | START/ STOP<br>(SW-205 S520) | REMOTE COMMANDER<br>(ED-35 S988) |

"1"=key switch ON
"0"=key switch OFF

### 16. Wireless Remote Control Unit Reception Content Check

| Page 1 | Address 1E |
|---|---|

| Wireless remote control unit key pressed | Data |
|---|---|
| None | FF |
| TELE | 9A |
| WIDE | 9B |
| Start/stop | 99 |
| Rewind | 1B |
| Fast forward | 1C |
| Stop | 18 |
| Playback | 1A |
| Data screen | 5A |
| Pause | 19 |
| SLOW | 23 |

## 17. EDIT Switch, Remote Commander Switch Check

| Page 1 | Address 0A |
|---|---|

| Bit7 | Bit6 | Bit5 | Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
|---|---|---|---|---|---|---|---|
| REC MODE<br>(SP/LP) | REMOTE<br>COMMANDER | | EDIT | | | | |

Bit6:
"1"=OFF
"0"=ON

Bit4:
"1"=EDIT ON
"0"=EDIT OFF

Bit7:
"1"=LP
"0"=SP

## 18. White Balance Mode and Focus Mode Display/Switchover

| Page 1 | Address 9A |
|---|---|

The mode can be switched when the data of page: 1, address: A3 is set to 04.

| Data | White Balance Mode |
|---|---|
| ∗ 1 | INDOOR |
| ∗ 2 | OUTDOOR |
| ∗ 3 | HOLD |
| ∗ 6 | AUTO |

| Data | Focus Mode |
|---|---|
| 0 ∗ | Manual |
| 1 ∗ | Automatic |

∗ : 0 to F

## 19. LCD, LED Check, etc.

| Page 1 | Address A3 |
|---|---|

| Data | Mode |
|---|---|
| 00 | Normal |
| 01 | Key input prohibited |
| 04 | Camera function renewal prohibited |

## 20. Page D Address List

**Note 1:** The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

**Note 2:** The data listed in the adjustment data memo column are the fixed data.
Check that these data have not been accidentally rewritten, after completing adjustments.

*1 No mark : AEP, UK model
[ ] : E, Australian model

| Address | Name | Function<br>[ ] indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 00 | Category code | Not used | | |
| 01 | Test mode | | 00 | 00 |
| 02 | Destination flag | | 8E[AE]*1 | 8E[AE]*1 |
| 03 | BATT END | Battery end adjustment | 8C | |
| 04 | SW POSITION | SW POSITION adjustment | 00 | |
| 05 | SW POSITION | SW POSITION adjustment | 0A | |
| 06 | EMERGENCY code (FIRST) | Error code and mode are memorized.<br>Rewrite the data of these addresses to 00 after repairs/adjustments | 00 | 00 |
| 07 | EMERGENCY code (LAST) | | 00 | 00 |
| 08 | EMERGENCY mode (FIRST) | | 00 | 00 |
| 09 | EMERGENCY mode (LAST) | | 00 | 00 |
| 0A | SR DATA (MP Normal SP) | CXA1207 serial data | 24 | 24 |
| 0B | SR DATA (MP Normal LP) | CXA1207 serial data | 16 | 16 |
| 0C | SR DATA (ME Hi8 SP) | CXA1207 serial data | 24 | 24 |
| 0D | SR DATA (ME Hi8 LP) | CXA1207 serial data | 16 | 16 |
| 0E | SR DATA (ME Normal SP) | CXA1207 serial data | 24 | 24 |
| 0F | SR DATA (ME Normal LP) | CXA1207 serial data | 16 | 16 |
| 10 | SR DATA (MP Hi8 SP) | CXA1207 serial data | 24 | 24 |
| 11 | SR DATA (MP Hi8 LP) | CXA1207 serial data | 16 | 16 |
| 12 | SR DATA (EDIT ON Normal) | CXA1207 serial data | 16 | 16 |
| 13 | SR DATA (EDIT ON Hi8) | CXA1207 serial data | 16 | 16 |
| 14 | CAM TITLE BLU R-Y | Camera titler color adjustment [Blue]. Not used | | |
| 15 | CAM TITLE BLU B-Y | Camera titler color adjustment [Blue]. Not used | | |
| 16 | CAM TITLE GRN R-Y | Camera titler color adjustment [Green]. Not used | | |
| 17 | CAM TITLE GRN B-Y | Camera titler color adjustment [Green]. Not used | | |
| 18 | CAM TITLE CYN R-Y | Camera titler color adjustment [Light blue]. Not used | | |
| 19 | CAM TITLE CYN B-Y | Camera titler color adjustment [Light blue]. Not used | | |
| 1A | CAM TITLE RED R-Y | Camera titler color adjustment [Red]. Not used | | |
| 1B | CAM TITLE RED B-Y | Camera titler color adjustment [Red]. Not used | | |
| 1C | CAM TITLE VIO R-Y | Camera titler color adjustment [Violet]. Not used | | |
| 1D | CAM TITLE VIO B-Y | Camera titler color adjustment [Violet]. Not used | | |
| 1E | CAM TITLE YEL R-Y | Camera titler color adjustment [Yellow]. Not used | | |
| 1F | CAM TITLE YEL B-Y | Camera titler color adjustment [Yellow]. Not used | | |
| 20 | Permission plug | | 04 | 04 |
| 21 | Adjustment plug | FORCED VTR ON, CAM ON etc<br>DATA — MODE<br>01 — FORCED CAMERA POWER ON<br>02 — FORCED VTR POWER ON | 00 | 00 |
| 22~29 | | Not used | | |

Table 9-2 (1).

| Address | Name | Function<br>[ ] indicate the adjustment voltage output terminal | Adjustment data | |
|---|---|---|---|---|
| | | | Initial value | Memo column |
| 2A | SLOW ADJ (FOWARD) | | 00 | 00 |
| 2B | SLOW ADJ (REVERSE) | | 00 | 00 |
| 2C | STILL ADJ | | 00 | 00 |
| 2D | BATT REMAIN LEVEL 1 | Amount of remaining battery 1 | A0 | |
| 2E | BATT REMAIN LEVEL 2 | Amount of remaining battery 2 | 99 | |
| 2F | BATT REMAIN LEVEL 3 | Amount of remaining battery 3 | 94 | |
| 30~42 | | Not used | | |
| 43 | 1-ch M.T NORMAL | 1 ch playback frequency characteristic adjustment [IC158 ②] | C0 | |
| 44 | | | | |
| 45 | 2-ch M.T NORMAL | 2 ch playback frequency characteristic adjustment [IC158 ③] | C0 | |
| 46 | REC C RF (EE) | REC C RF level adjustment (EE) [IC156 ⑩] | B8 | |
| 47 | REC C RF (PB) | REC C RF level adjustment (PB) [IC156 ⑩] | 00 | 00 |
| 48 | RF CONT (ME) | ATF RF level (ME) [IC158 ⑤] | 64 | 64 |
| 49 | RF CONT (MP) | ATF RF level (MP) [IC158 ⑤] | 70 | 70 |
| 4A | EE LEVEL | EE level adjustment [IC156 ⑮] | 70 | 70 |
| 4B | | Not used | | |
| 4C | COMB ADJ | Chroma comb filter adjustment [IC156 ③] | A8 | |
| 4D | SR-IR | IR adjustment [IC156 ②] | AE | |
| 4E | Y-FM CARRIER (Hi8) | | | |
| 4F | Y-FM CARRIER (NORMAL) | Y-FM carrier frequency adjustment [IC156 ⑤] | A8 | |
| 50 | Y-FM DEVIATION (Hi8) | | | |
| 51 | Y-FM DEVIATION (NORMAL) | Y-FM deviation adjustment [IC156 ⑥] | 95 | |
| 52 | REC Y LEVEL (EE Hi8 ME) | | | |
| 53 | REC Y LEVEL (EE Hi8 MP) | | | |
| 54 | REC Y LEVEL (EE NOR ME) | REC Y recording current adjustment (ME) [IC156 ⑦] | 95 | |
| 55 | REC Y LEVEL (EE NOR MP) | REC Y recording current adjustment (MP) [IC156 ⑦] | 95 | |
| 56 | REC Y LEVEL (PB) | Playback REC Y level [IC156 ⑦] | 00 | 00 |
| 57 | PB Y LEVEL (EE) | EE PB Y level [IC158 ⑮] | 00 | 00 |
| 58 | PB Y LEVEL (Hi8) | | | |
| 59 | PB Y LEVEL (NORMAL) | Normal PB Y level adjustment [IC158 ⑮] | B0 | |
| 5A | EMPHASIS INPUT LEVEL | EE emphasis input level adjustment [IC156 ④] | A5 | |
| 5B | PB LINE LEVEL | Playback emphasis input level adjustment [IC156 ④] | AF | |
| 5C~79 | | Not used | | |
| 7A | 1.5 IR | 1.5 MHz IR adjustment [IC158 ⑥] | A0 | |
| 7B | 1.5 DEV | 1.5 MHz deviation adjustment [IC158 ⑦] | A0 | |
| 7C~FF | | Not used | | |

Table 9-2 (2)

## 9-2. POWER SYSTEM ADJUSTMENTS

### 1. Oscillator Frequency Check (DD-48 board)

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |
| Measurement Point | Q903 collector |
| Measuring Instrument | Frequency counter |
| Specified Value | 510 ± 35 kHz |

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

### 2. Power Voltage Check (DD-48 board)

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |
| Measuring Instrument | Digital voltmeter |
| EVF 5V check | |
| Measurement Point | Pin ⑪ of CN901 |
| Specified Value | 4.93 ± 0.15 Vdc |
| D5V check | |
| Measurement Point | Pins ⑤ and ⑧ of CN901 |
| Specified Value | 4.92 ± 0.15 Vdc |
| D4V check | |
| Measurement Point | Pin ④ of CN901 |
| Specified Value | 3.98 ± 0.15 Vdc |
| VID 5V check | |
| Measurement Point | Pins ⑰, ⑳ of CN901 |
| Specified Value | 4.90 ± 0.10 Vdc |
| RP 5V check | |
| Measurement Point | Pin ㉒ of CN901 |
| Specified Value | 4.89 ± 0.15 Vdc |
| AU5V check | |
| Measurement Point | Pin ⑲ of CN901 |
| Specified Value | 4.90 ± 0.15 Vdc |
| CAM5V check | |
| Measurement Point | Pins ⑦ and ⑩ of CN901 |
| Specified Value | $4.86^{+0.15}_{-0.11}$ Vdc |
| CAM15V check | |
| Measurement Point | Pin ⑫ of CN901 |
| Specified Value | 15.05 ± 0.4 Vdc |
| CAM –9V check | |
| Measurement Point | Pin ⑨ of CN901 |
| Specified Value | –8.5 ± 0.4 Vdc |

## 9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

### 1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to “Page D address list” in “9-1-8. Service Mode”.

| | |
|---|---|
| Mode | E-E |
| Signal | Arbitrary |
| Adjustment Page | D |
| Adjustment Address | 00 to 7D |

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address. (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

## 2. Battery End Adjustment

| | |
|---|---|
| Mode | Camera record |
| Signal | Arbitrary |
| Measurement Point | LCD display of the adjusting remote control unit |
| Measuring Instrument | |
| Adjustment Page | D |
| Specified Value | 03 (BATT END)<br>2D (BATT REMAIN LEVEL 1)<br>2E (BATT REMAIN LEVEL 2)<br>2F (BATT REMAIN LEVEL 3) |

Connection:
1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

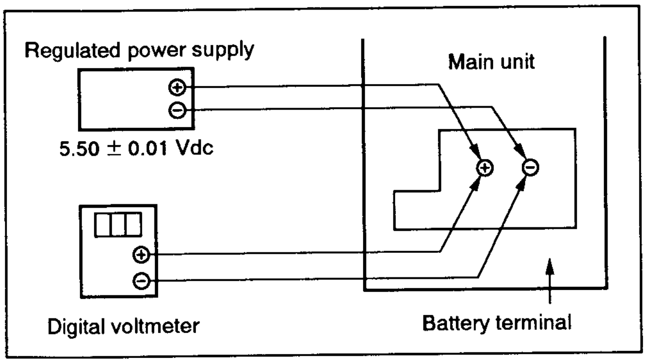


Fig. 9-4.

Adjusting method:
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01.
   (Test mode 1 setting)
4) Set to the camera recording mode.
5) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
6) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
7) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
8) Convert DEND to decimal to obtain DEND′. (Refer to Table 7-6. "Hexadecimal notation – decimal notation conversion table")
9) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D D2D′=DEND′+18
   Address: 2E D2E′=DEND′+14
   Address: 2F D2F′=DEND′+8
   **Note:** After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
10) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (Test mode 1 release)
11) Perform "Battery Down Check".

## 3. Battery Down Check

| | |
|---|---|
| Mode | Camera record |
| Subject | Arbitrary |

Connection
1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-4.

Checking method:
Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.70 ± 0.01 Vdc.
4) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.58 ± 0.01 Vdc.
6) Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
8) Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

## 9-4. SERVO SYSTEM ADJUSTMENTS

### 1. Switching Position Adjustment (VS-95 board)

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For tracking adjustment (WR5-1CP) |
| Measurement Point | CH1: Pin ④ of CN002 (RF SWP)<br>CH2: Pin ③ of CN002 (PB RF) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 04 (SW POSITION)<br>05 (SW POSITION) |
| Specified Value | $t_1$=0 ± 10 μsec |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 0A to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "$t_1$". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position ($t_1$) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

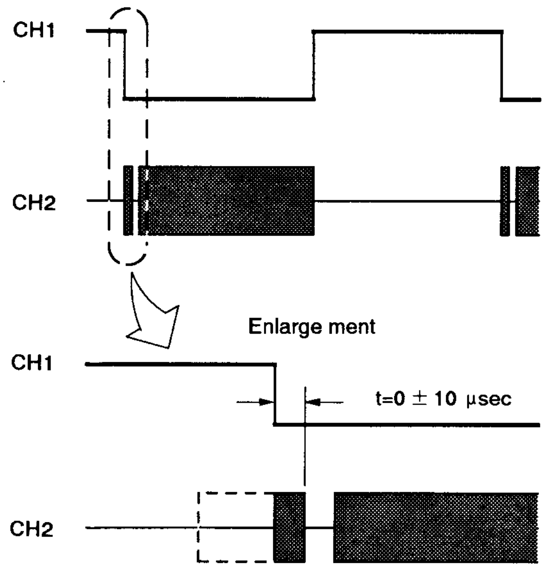


Fig. 9-5.

## 9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-2.

**[Adjusting procedure]**

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis f0 adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check

## 1. Playback Frequency Characteristic Adjustment (VS-95 board)

**Note 1:** The adjusting element for CH2 is shown in parentheses [ ].

| Mode | Playback |
|---|---|
| Signal | Alignment tape:<br>For frequency characteristic adjustment (WR5-6C) |
| Measurement Point | CH1: Pin ③ of CN002<br>EXT TRIG: Pin ④ of CN002 |
| Measuring Instrument | Oscilloscope<br>TRIG SLOPE: +, [–] |
| Adjustment Page | D |
| Adjustment Address | 43 (MT 1CH) [45 (MT 2CH)] |
| Specified Value | 3.58 MHz level: 5.5 MHz level=<br>4: (3 ± 0.3) |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 05, set data: 10.
3) Press the PAUSE button of the adjusting remote control unit.
4) Change the data of address: 43 [45] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
   **Note 2:** After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
5) Set the data memorized at step 2) to page: D, address: 05, and press the PAUSE button of the adjusting remote control unit.

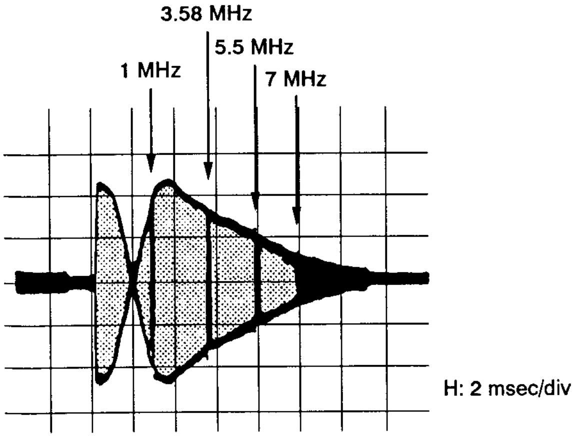


Fig. 9-6.

## 2. Flying Erase Check (VS-95 board)

| Mode | Record |
|---|---|
| Signal | Arbitrary |
| Measurement Point | Pin ② of W001 (FE (X)) |
| Measuring Instrument | Oscilloscope and frequency counter |
| Specified Value | Frequency: approx. 7.5 MHz<br>Voltage: Above 1.5 Vp-p |

**Note:** Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is approx. 7.5 MHz and that the oscillation voltage is above 1.5 Vp-p.

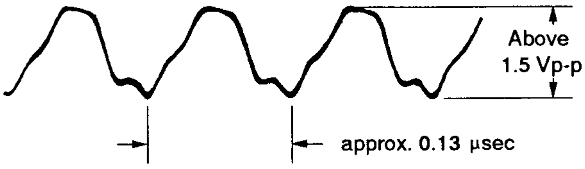


Fig. 9-7.

## 3. VXO Oscillation Frequency Check (VS-95 board)

| Mode | STOP |
|---|---|
| Signal | Color bar |
| Measurement Point | Pin ⑫ of IC152 |
| Measuring Instrument | Frequency counter |
| Specified Value | 4433618 ± 70 Hz |

**Note:** Connect the frequency counter via a high impedance (approximately 10 MΩ ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC152 is 4433618 ± 70 Hz.

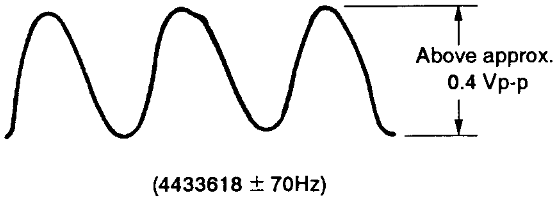


Fig. 9-8.

## 4. EE Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ② of CN101 (VIDEO OUT)<sup>Note</sup> |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 4A (EE LEVEL) |
| Specified Value | A=1.00 ± 0.025V |

**Note:** Terminate pin ② of CN101 at 75 Ω.
After completing adjustments, remove the 75 Ω resistor.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

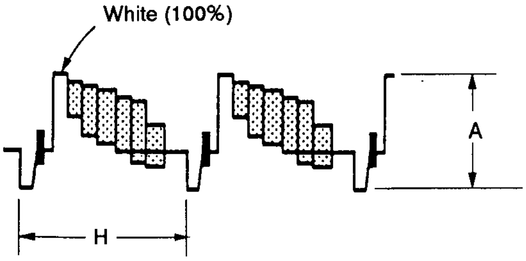


Fig. 9-9.

## 5. IR Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ⑦ of IC151 (Y COMB OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 4D (SR IR) |
| Specified Value | Residual chroma component (A) is minimum (below 80 mVp-p) |

Connection

1) Connect pin ⑭ of IC151 (VREF: 3.5 Vdc) or pin ② of IC159 to pin (51) of IC151 with a jumper wire.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

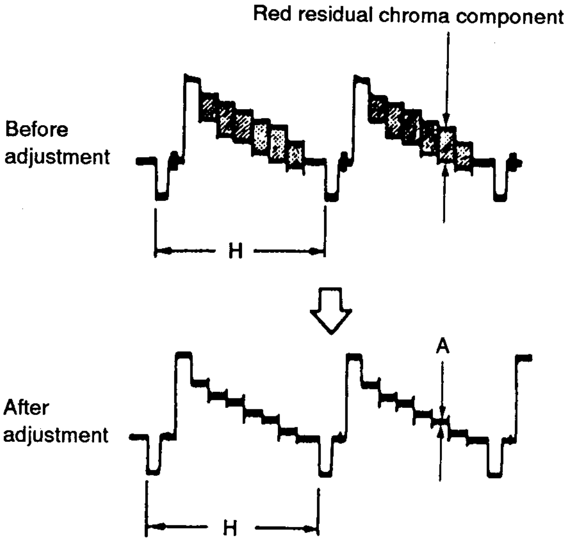


Fig. 9-10.

## 6. Y/C Separation Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ⑪ of IC151 (C+CD) |
| Adjusting Element | Oscilloscope |
| Measuring Instrument | RV051 (Phase) |
| Adjustment Page | D |
| Adjustment Address | 4C (Y/C SEP DL LEVEL) |
| Specified Value | Residual chroma component (A) is minimum. |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV051 so that the residual chroma component (A) becomes minimum.
5) Press the PAUSE button of the adjusting remote control unit.

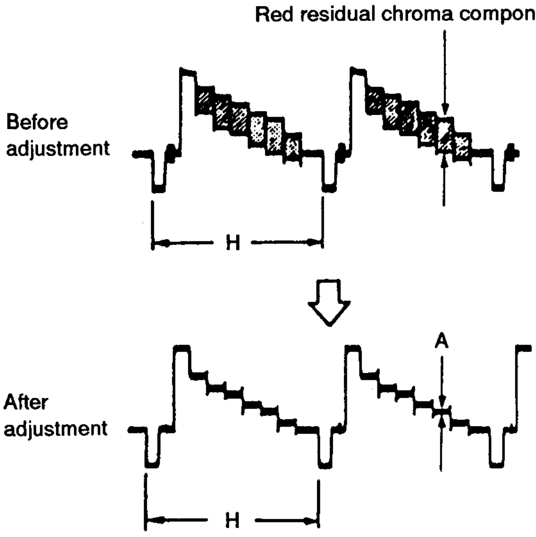


Fig. 9-11.

## 7. Emphasis Input Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar without burst signal |
| Measurement Point | Pin ③ of IC155 (or Pin ③ of IC151) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 5A (EMPHASIS INPUT LEVEL) |
| Specified Value | A=0.50 ± 0.025V |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

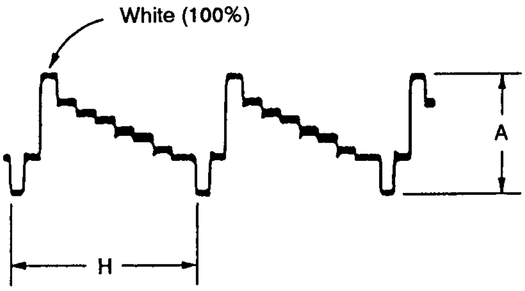


Fig. 9-12.

### 8. PB Y Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Color bar section |
| Measurement Point | Pin ㉑ of IC151 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | • Normal mode<br>59 (NORMAL PB Y LEVEL) |
| Specified Value | A=0.50 ± 0.025V |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

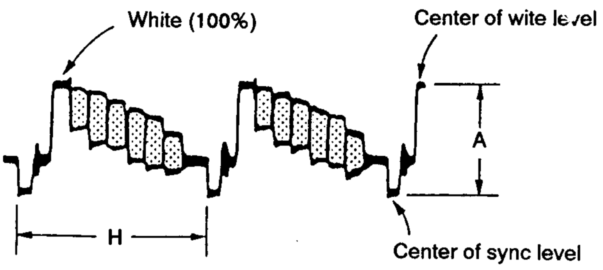


Fig. 9-13.

### 9. PB LINE OUT Level Adjustment

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP)<br>Color bar section |
| Measurement Point | Video output terminal<br>(terminated at 75 Ω ) |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 5B (PB LINE LEVEL) |
| Specified Value | A=1.0 ± 0.025V |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

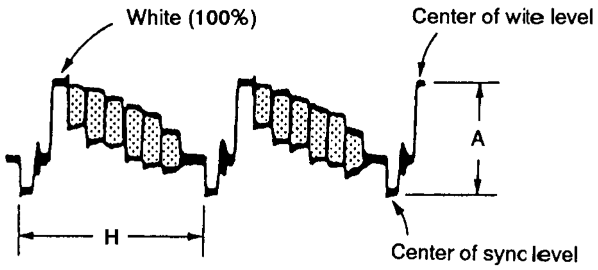


Fig. 9-14.

## 10. Y FM Carrier Frequency Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | No signal |
| Measurement Point | Pin ⑤ of IC003 (REC Y RF OUT) |
| Measuring Instrument | Frequency counter |
| Adjustment Page | D |
| Adjustment Address | 4F (Y FM CARRIER) |
| Specified Value | 4.38 ± 0.04 MHz |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

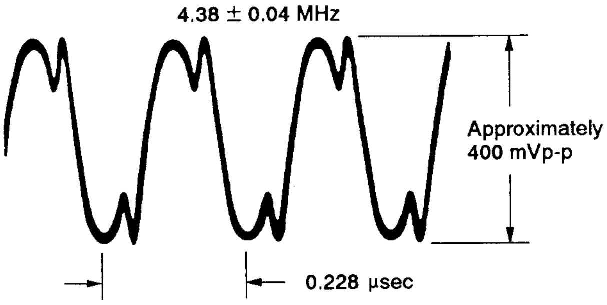


Fig. 9-15.

## 11. Deviation Adjustment (VS-95 board)

| | |
|---|---|
| Mode | Record and playback |
| Signal | Color bar |
| Measurement Point | Pin ㉑ of IC151 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 51 (Y FM DEVIATION) |
| Specified Value | A=0.50 ± 0.025V |

**Note:** Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

| Playback signal level | Changing the data |
|---|---|
| When smaller than the specified value | Increase |
| When bigger than the specified value | Decrease |

6) Press the PAUSE button of the adjusting remote control unit.

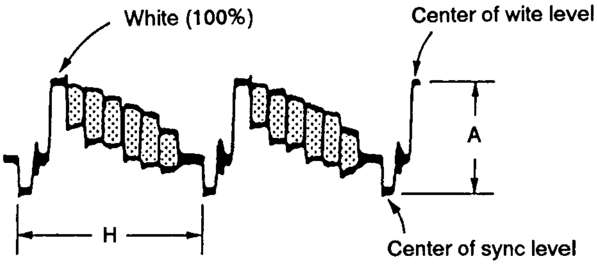


Fig. 9-16.

## 12. Chroma Emphasis fo Adjustment (VS-95 board)

| | |
|---|---|
| Mode | E-E |
| Signal | Color bar |
| Measurement Point | Pin ㉔ of IC152 |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | FL153 |
| Specified Value | Minimum fo component |

Connection:

1) Connect pin ㉔ of IC152 to GND with a 3.3 kΩ resistor (1-249-423-11).

Adjusting method

1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

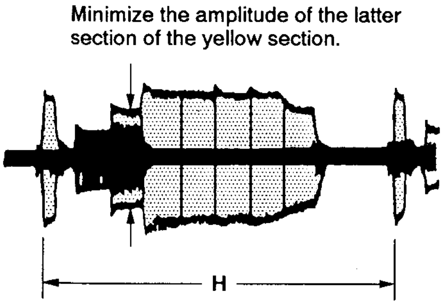

Minimize the amplitude of the latter section of the yellow section.
H

Fig. 9-17.

## 13. REC Y Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | Record (SP) |
| Signal | No signal |
| Measurement Point | Pin ⑤ of IC003 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 55 (REC Y LEVEL EE NOR MP)<br>54 (REC Y LEVEL EE NOR ME) |
| Specified Value | A=205 ± 5 mVp-p |

**Note:** Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Set the data of page: D, address: 55 to page: D, address: 54.
5) Press the PAUSE button of the adjusting remote control unit.

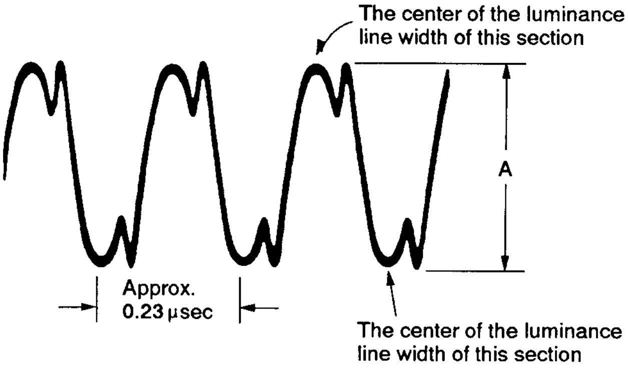

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 9-18.

## 14. REC C Level Adjustment (VS-95 board)

| | |
|---|---|
| Mode | Record (SP) |
| Signal | Color bar |
| Measurement Point | Pin ③ of IC003 |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 46 (REC C RF (EE)) |
| Specified Value | A=110 ± 10 mVp-p |

**Note:** Use a MP type tape.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the REC C level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

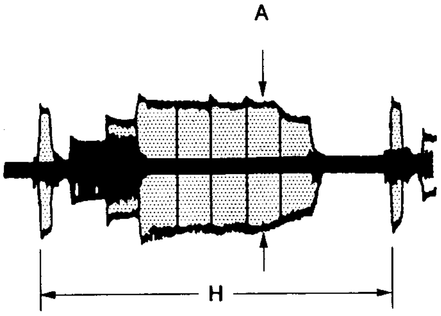


Fig. 9-19.

## 15. REC ATF Level Check (VS-95 board)

| | |
|---|---|
| Mode | Record (SP) |
| Signal | No signal |
| Measurement Point | Pin ㉔ of IC001 (REC 1CH) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=8 ± 2 mVp-p |

**Note:** Use a MP type tape.

Connection:

1) Remove the AU-138 board CN602.

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   **Note:** Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

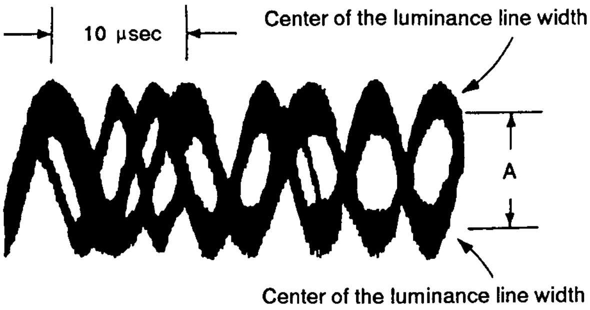


Fig. 9-20.

### 16. REC AFM Level Check (VS-95 board)

| | |
|---|---|
| Mode | Record (SP) |
| Signal | No signal |
| Measurement Point | Pin ㉔ of IC001 (REC 1CH) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=9 ± 2 mVp-p |

**Note:** Use a MP type tape.

Connection:

1) Connect Pin ⑨ of IC404 and GND with a 0.01 $\mu$F capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   **Note:** Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

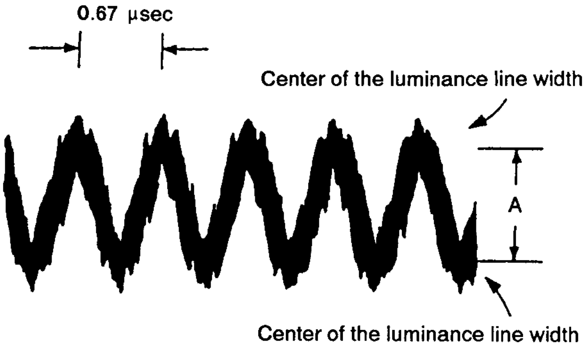
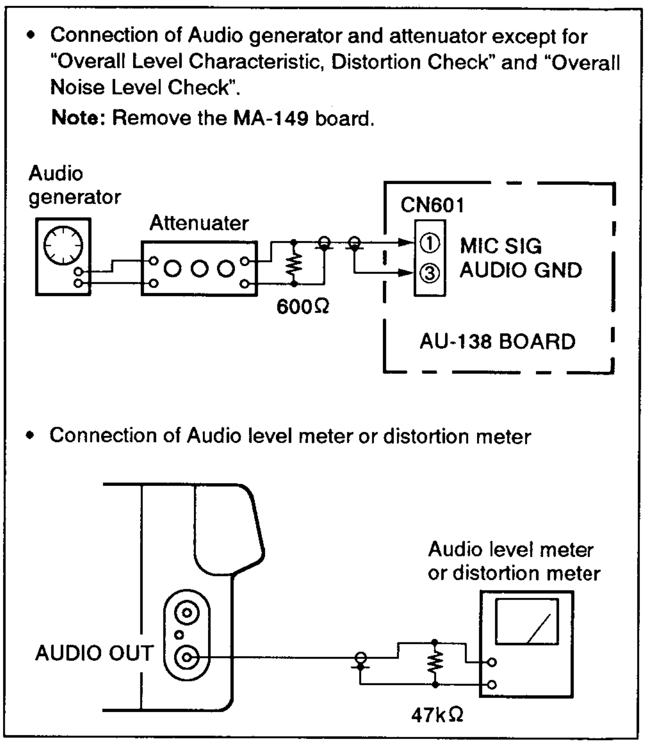


Fig. 9-21.

## 9-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.

**[Connecting the measuring instruments for the audio]**
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-22, and perform adjustments with the power switch [player] position.



- Connection of Audio generator and attenuator except for "Overall Level Characteristic, Distortion Check" and "Overall Noise Level Check".
  **Note:** Remove the MA-149 board.

- Connection of Audio level meter or distortion meter

Fig. 9-22.

**[Adjustment Procedure]**

1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Recording level check
6) Overall level characteristics, distortion check
7) Overall noise level check

## 1. E-E Output Level Check (AU-138 board)

| | |
|---|---|
| Mode | Record |
| Signal | 400 Hz, –36.1 dBs, pin ① of CN601 |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter |
| Specified Value | –7.5 ± 2 dBs |

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

## 2. IR Adjustment (AU-138 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking operations<br>(WR5-5CSP) |
| Measurement Point | +: Pin ⑥ of IC601<br>–: Pin ㊹ of IC601 (C629 ⊕) |
| Measuring Instrument | Digital voltmeter |
| Adjustment Page | D |
| Adjustment Address | 7A (1.5 IR) |
| Specified Value | The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7A and adjust so that the DC voltage becomes 0 ± 10 mVdc.
3) Press the PAUSE button of the adjusting remote control unit.

## 3. Deviation Adjustment

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For checking the operation<br>(WR5-5CSP) |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Oscilloscope |
| Adjustment Page | D |
| Adjustment Address | 7B (1.5 DEV) |
| Specified Value | –7.5 ± 0.5 dBs |

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

## 4. Carrier Frequency Check (AU-138 board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ㉛ of CN602 (REC AFM) |
| Measuring Instrument | Frequency counter (Note 1) |
| Specified Value | 1.500 ± 0.002 MHz |

**Note:** Use a high impedance (above 1 MΩ ) and low capacity (below 20 pF) probe.

Checking method:

1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

## 5. Record Level Check (AU-138 board)

| | |
|---|---|
| Mode | Record |
| Signal | No signal |
| Measurement Point | Pin ㉛ of CN602 (REC AFM) |
| Measuring Instrument | Oscilloscope |
| Specified Value | A=48 ± 8 mVp-p |

Checking method:

1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

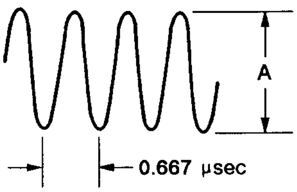


Fig. 9-23.

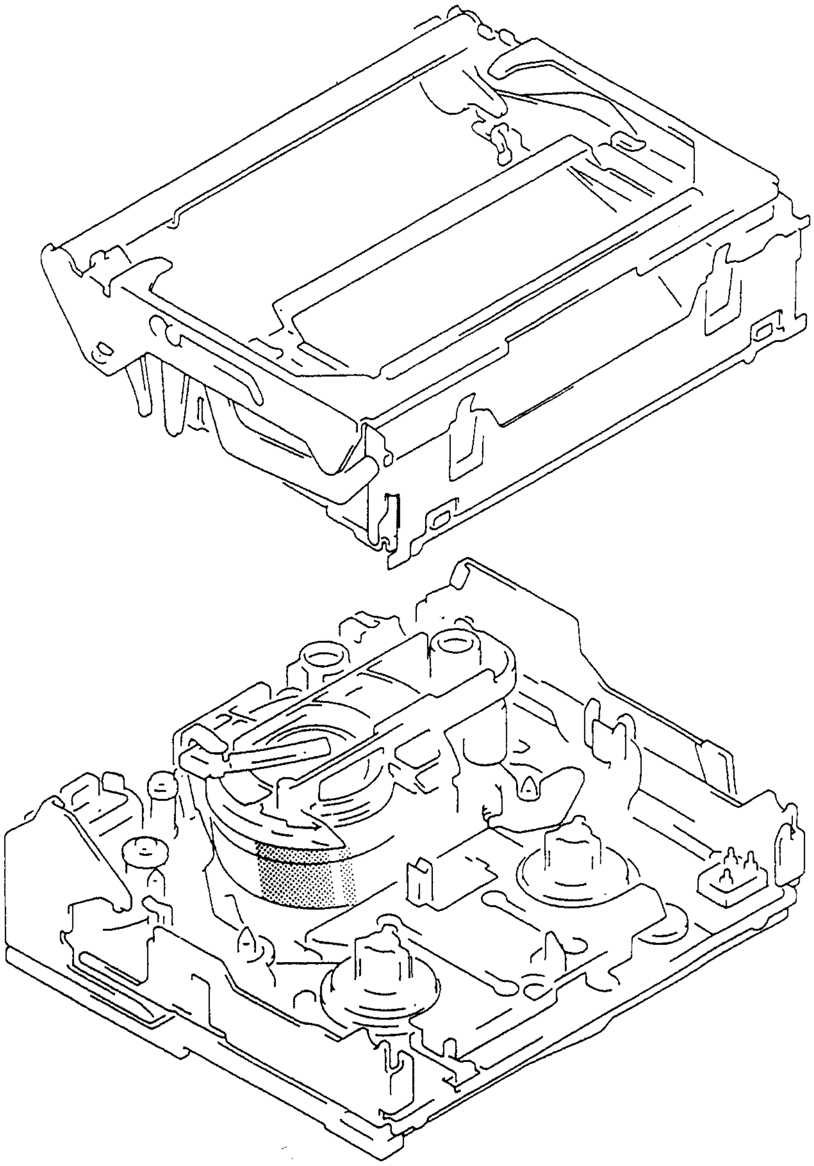
# 8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅳ

V12995

## A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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# 1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

## 1-1. CASSETTE COMPARTMENT ASSEMBLY

### 1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow Ⓐ to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow Ⓑ.
4) With the cassette compartment assembly ❺ pushed in arrow Ⓒ direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow Ⓓ to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
   In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow Ⓒ until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow Ⓓ to remove the cassette compartment assembly.

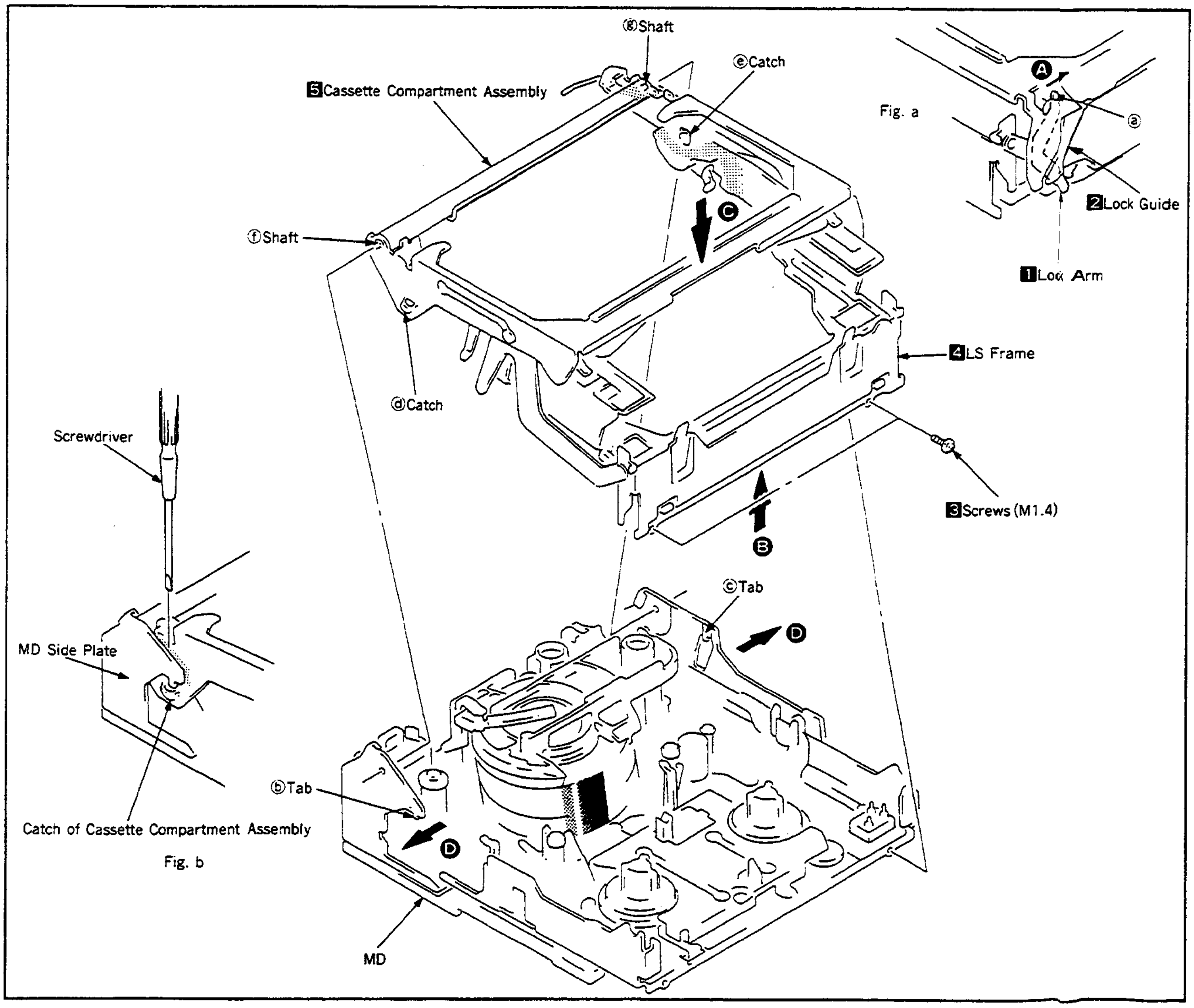

ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
Fig. a
Ⓐ
ⓐ
❷Lock Guide
❶Lock Arm
ⓕShaft
Ⓒ
❹LS Frame
ⓓCatch
Screwdriver
❸Screws (M1.4)
Ⓑ
ⓒTab
Ⓓ
MD Side Plate
ⓑTab
Catch of Cassette Compartment Assembly
Fig. b
Ⓓ
MD

Fig. 1

## 2. Mounting (Fig. 2)

1) Select the [USE] mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓙ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

**Note** : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

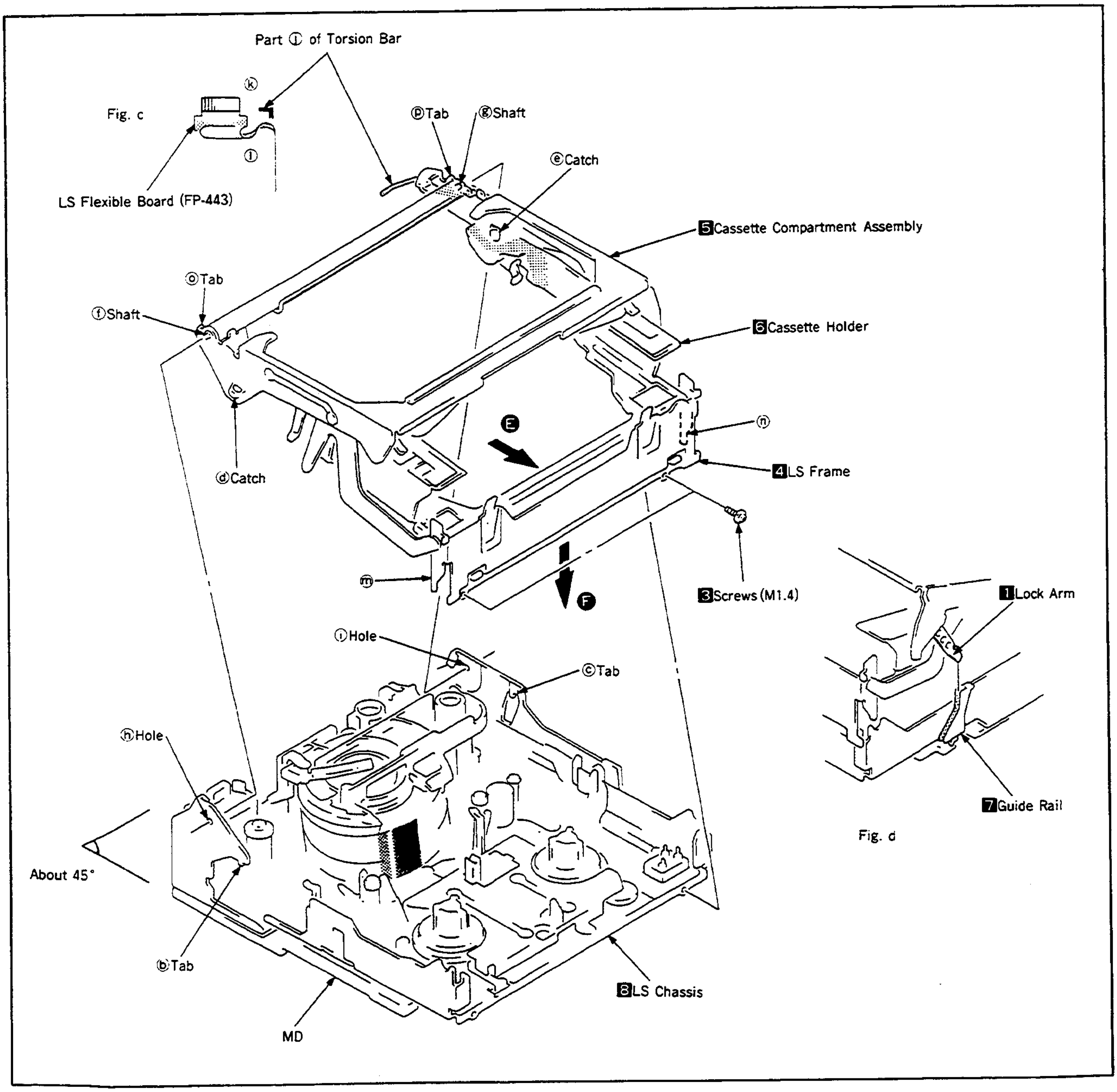

Part ⓙ of Torsion Bar
ⓚ
Fig. c
ⓛ
LS Flexible Board (FP-443)
ⓟTab
ⓖShaft
ⓔCatch
❺Cassette Compartment Assembly
ⓞTab
ⓕShaft
❻Cassette Holder
ⓓCatch
🅔
ⓝ
❹LS Frame
ⓜ
🅕
❸Screws (M1.4)
❶Lock Arm
ⓘHole
ⓒTab
ⓗHole
❼Guide Rail
Fig. d
About 45°
ⓑTab
❽LS Chassis
MD

Fig. 2

## 1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap ❷ on the Reflector C ❶.
3) Press the pin of the push switch ❸ (ON state) and fix it with adhesive tape ❹ in that state.

**Note** : Press the asterisked (✱) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch ❺ in an arrow direction as shown in Fig. a.

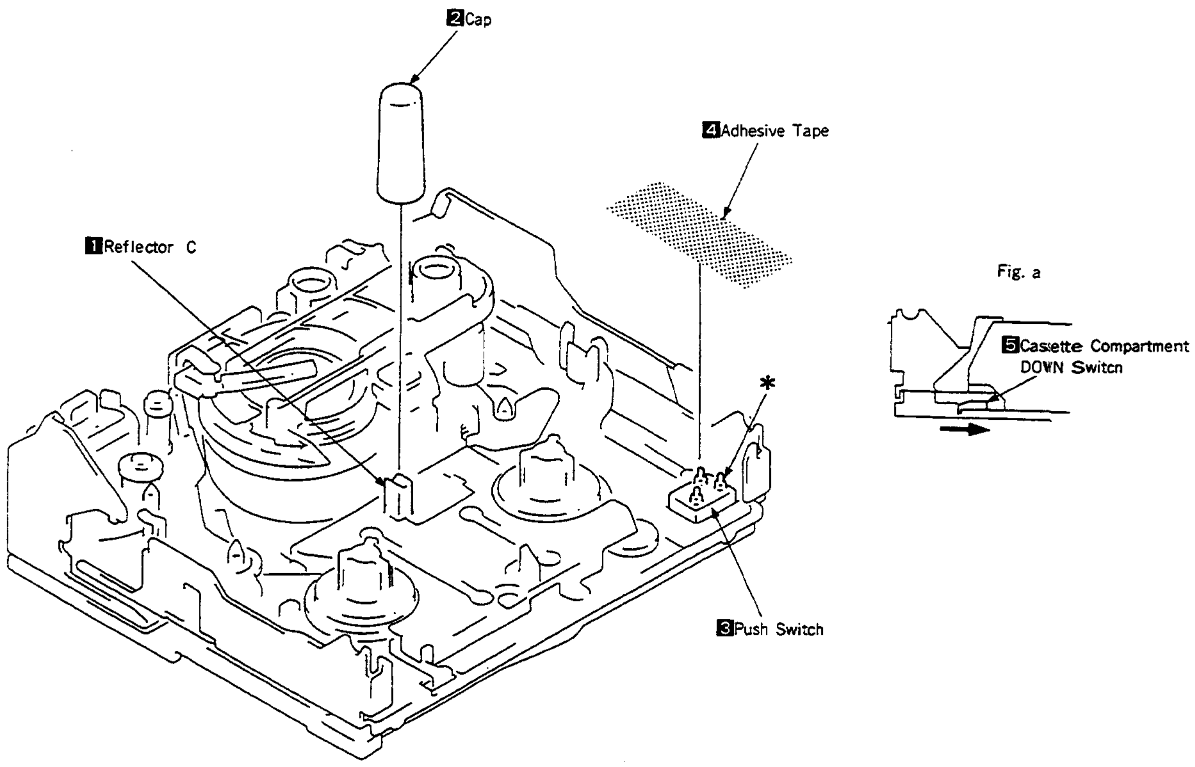

❷Cap
❹Adhesive Tape
❶Reflector C
Fig. a
❺Cassette Compartment
DOWN Switch
✱
❸Push Switch

Fig. 3

### 1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

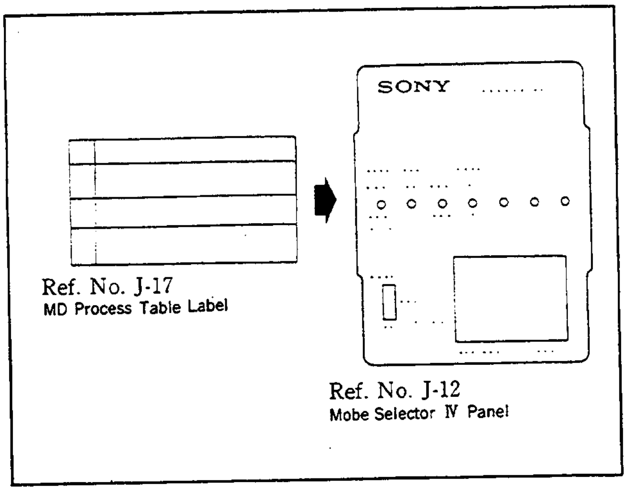

SONY
Ref. No. J-17
MD Process Table Label
Ref. No. J-12
Mobe Selector Ⅳ Panel

Fig. 4

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

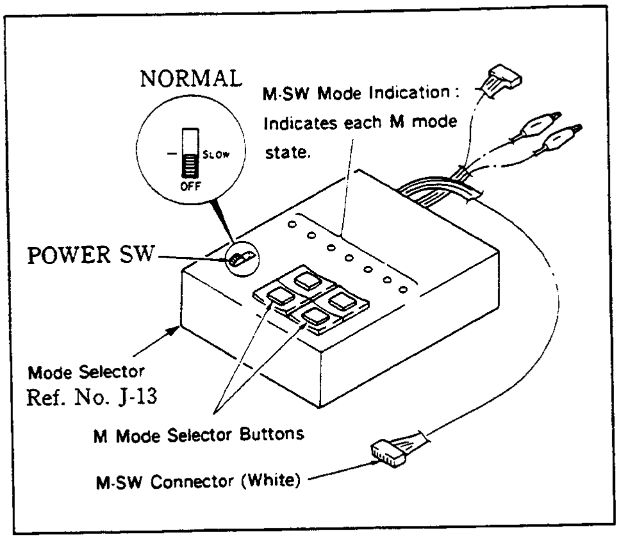

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref. No. J-13
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

For CCD-FX410 series

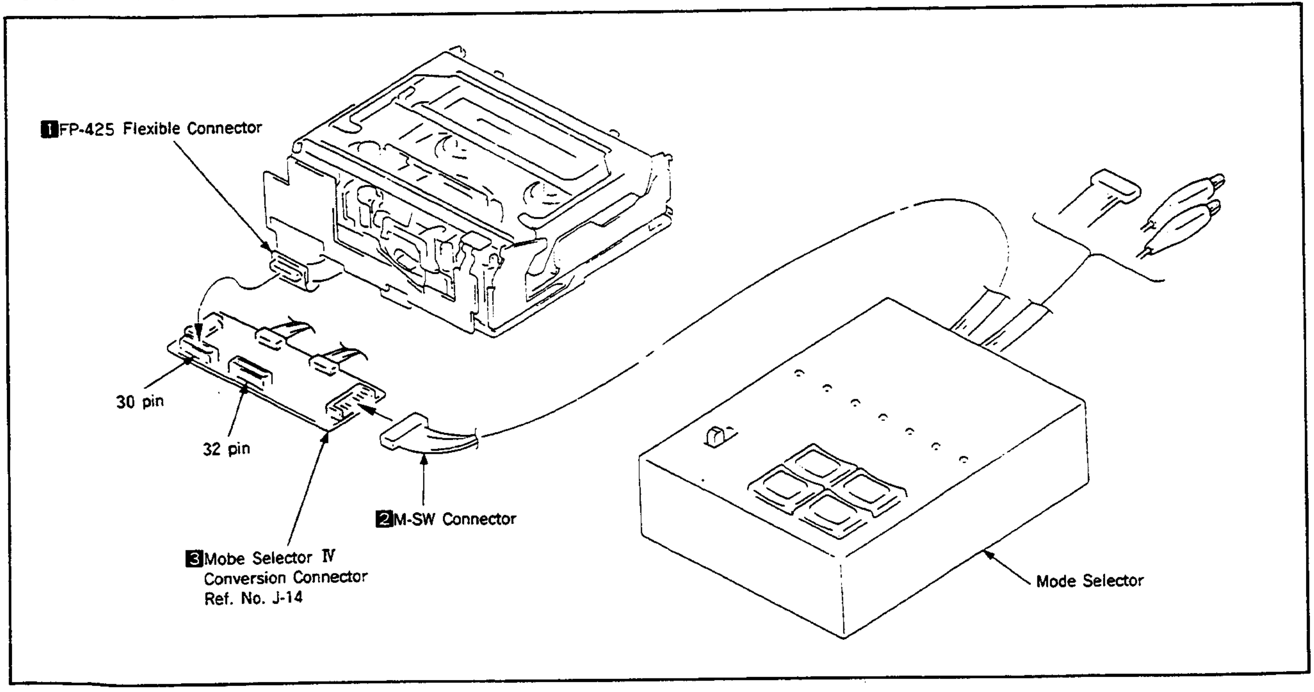
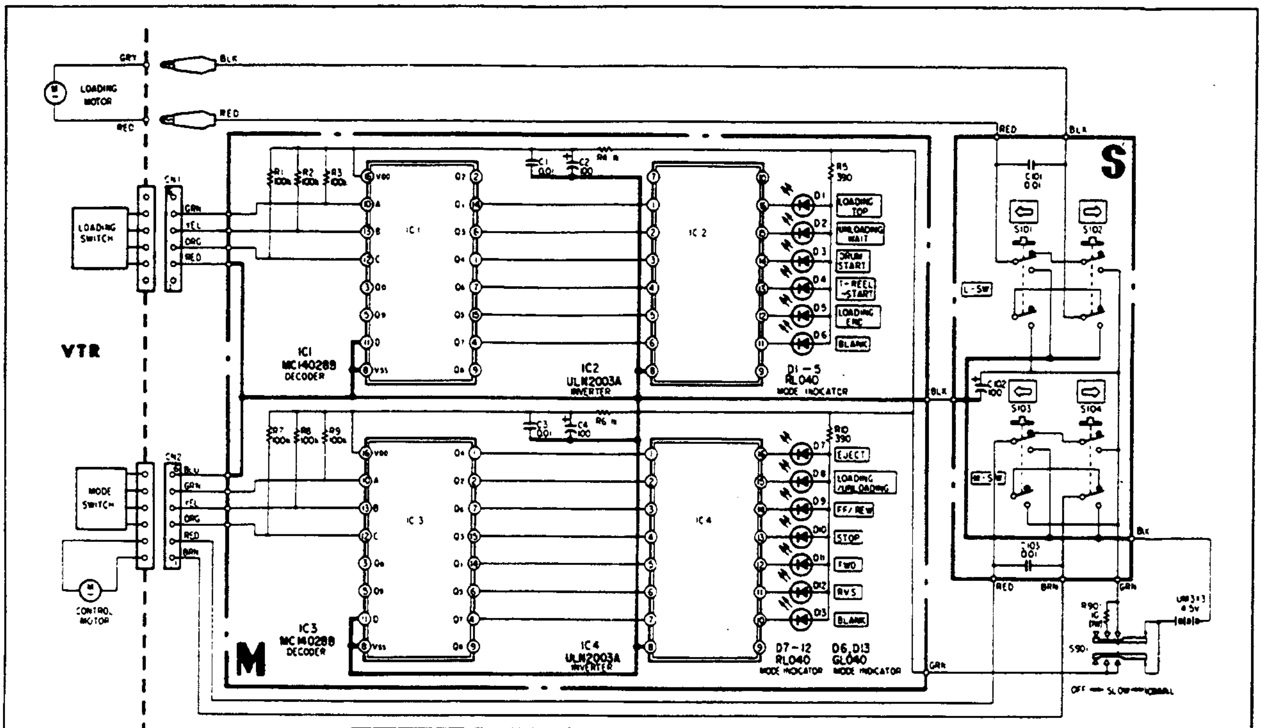

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector Ⅳ
Conversion Connector
Ref. No. J-14
Mode Selector

Fig. 6

## 1-4. MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
LOADING MOTOR
RED
LOADING SWITCH
CN1
GRN
YEL
ORG
RED
VTR
CN2
BLU
MODE SWITCH
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
C1 .001
C2 100
R4 1k
R5 390
IC1
MC14028B
DECODER
IC2
ULN2003A
INVERTER
D1
D2
D3
D4
D5
D6
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
D1-5
RL040
MODE INDICATOR
R7 100k
R8 100k
R9 100k
C3 .001
C4 100
R6 1k
R10 390
IC3
MC14028B
DECODER
IC4
ULN2003A
INVERTER
D7
D8
D9
D10
D11
D12
D13
EJECT
LOADING/UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
D7-12
RL040
MODE INDICATOR
D6, D13
GL040
MODE INDICATOR
M
S
RED
BLK
C101 .001
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 .001
BRN
GRN
R901
S901
OFF → SLOW → NORMAL

M-SW (IC 3)

| DECODER INPUT | | | MODE | LED NO |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | FWD | D11 |
| 0 | 1 | 0 | LOADING/UNLOADING | D8 |
| 0 | 1 | 1 | STOP | D10 |
| 1 | 0 | 0 | EJECT | D7 |
| 1 | 0 | 1 | RVS | D12 |
| 1 | 1 | 0 | FF/REW | D9 |
| 1 | 1 | 1 | BLANK | D13 |

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW (IC 1)

| DECODER INPUT | | | MODE | LED NO |
|---|---|---|---|---|
| C | B | A | | |
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | LOADING TOP | D1 |
| 0 | 1 | 0 | | |
| 0 | 1 | 1 | LOADING END | D5 |
| 1 | 0 | 0 | DRUM START | D3 |
| 1 | 0 | 1 | UNLOADING WAIT | D2 |
| 1 | 1 | 0 | T-REEL-START | D4 |
| 1 | 1 | 1 | BLANK | D6 |

| SWITCH | | DIRECTION OF MOTOR REVOLUTION |
|---|---|---|
| ⇦ | ⇨ | |
| OFF | OFF | STOP |
| ON | OFF | ⇦ |
| OFF | ON | ⇨ |

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

## 1-5. MODE SELECTOR PARTS LIST

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | CAPACITOR | | |
| C1 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C2 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C3 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C4 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C101 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| C102 | 1-123-333-00 | ELECT | 100$\mu$F | 24V |
| C103 | 1-108-579-00 | MILER | 0.01$\mu$F | 50V |
| | | DIODE | | |
| D1 | 8-719-812-31 | DIODE TLR123 | | |
| D2 | 8-719-812-31 | DIODE TLR123 | | |
| D3 | 8-719-812-31 | DIODE TLR123 | | |
| D4 | 8-719-812-31 | DIODE TLR123 | | |
| D5 | 8-719-812-31 | DIODE TLR123 | | |
| D6 | 8-719-812-33 | DIODE TLG123A | | |
| D7 | 8-719-812-31 | DIODE TLR123 | | |
| D8 | 8-719-812-31 | DIODE TLR123 | | |
| D9 | 8-719-812-31 | DIODE TLR123 | | |
| D10 | 8-719-812-31 | DIODE TLR123 | | |
| D11 | 8-719-812-31 | DIODE TLR123 | | |
| D12 | 8-719-812-31 | DIODE TLR123 | | |
| D13 | 8-719-812-33 | DIODE TLG123A | | |

| Ref. No | Part No. | Description | | |
|---|---|---|---|---|
| | | IC | | |
| IC1 | 8-752-240-28 | IC TC4028BP | | |
| IC2 | 8-752-120-03 | IC $\mu$PA2003C | | |
| IC3 | 8-759-240-28 | IC TC4028BP | | |
| IC4 | 8-759-120-03 | IC $\mu$PA2003C | | |
| | | RESISTOR | | |
| R1 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R2 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R3 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R4 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R5 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R6 | 1-247-131-00 | CARBON | 1K | 1/4W |
| R7 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R8 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R9 | 1-247-179-00 | CARBON | 100K | 1/4W |
| R10 | 1-247-121-00 | CARBON | 390 | 1/4W |
| R901 | 1-214-594-00 | METAL | 10 | 1W |

## 2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

### 2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

**Note** : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

### 2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the $\boxed{\text{USE}}$ mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

**Note** : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

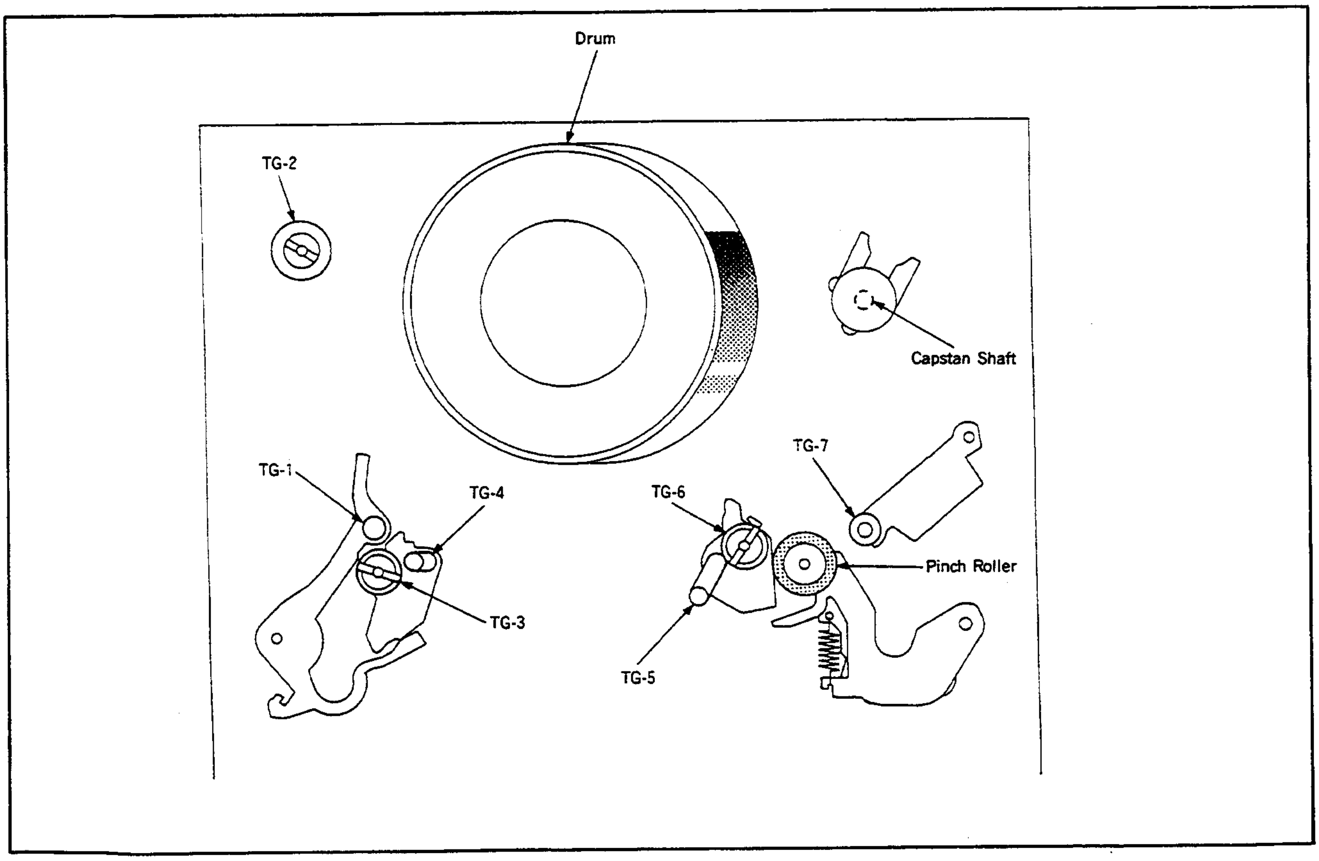


Fig. 7

## 2-3. PERILDIC CHECK ITEMS

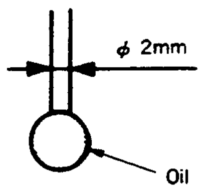
| | Location of Maintenance and check | Hours of Use (H) | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | |
| Tape trans-portion System | Cleaning of tape path surface | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| | Cleaning and degaussing of rotary assembly | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Be careful of oil |
| Driving System | Relay belt | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | 3-944-539-01 |
| | Capstan shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | Be adsolutely careful not to get oil on the tape path surface. |
| | Relay pulley shaft | — | ◎ | — | ◎ | — | ◎ | — | ◎ | — | ◎ | |
| | Loading motor | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | A-7040-304-A |
| Performance Confirmation | Abnormal noise | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | |
| | Back tension measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | Brake system | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |
| | FWD. RVS torque measurement | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | |

○ : Cleaning ◎ : Oil ☆ : Confirmation

**Note :** When overhauling, refer to the items above to replace parts.

**Note :** Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

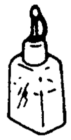


## 2-4. Service jigs list

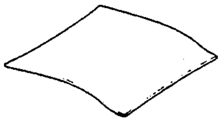
| Ref. No. | Name | Part No. | Fixture No. | Usage and Others |
|---|---|---|---|---|
| J-1 | Cleaning fluid | Y-2031-001-0 | | |
| J-2 | Chamois cloth | 2-034-697-00 | | |
| J-3 | Super fine applicator<br>(Made by NIPPON APPLICATOR, P752D) | | | |
| J-4 | Head degausser | Widely available | | |
| J-5 | Small mirror for adjustment<br>Spare mirror | J-6080-029-A<br>J-6080-030-1 | SL-5052 | Tape path |
| J-6 | Alignment tape NTSC (WR5-1N)<br>PAL (WR5-1C) | 8-967-995-01<br>8-967-995-06 | | Tape path |
| J-9 | FWD and RVS winding torque cassette | J-6080-824-A | GD-2086 | |
| J-10 | Rotary drum jig | (Attached to the maintenance rotary upper drum) | | |
| J-11 | Screwdriver for tape path | J-6082-026-A | | For tape guide adjustment |
| J-12 | Mode selector Ⅳ panel | J-6082-105-A | | |
| J-13 | Mode selector | J-6080-825-A | | For all models |
| J-14 | Mode selector Ⅳ conversion connector | J-6082-167-A | | |
| J-15 | FWD B.T. adjusting driver | J-6082-182-A | | |
| J-16 | Adjusting remote controller | J-6082-053-B | | Tape path (Setting of PATH mode) |
| J-17 | MD process table label | J-6082-166-A | | |

Other equipment
- ●Oscilloscope
- ●Analog tester (20 kΩ)

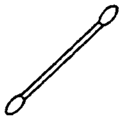
J-1



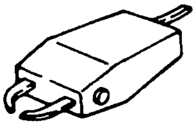
J-2



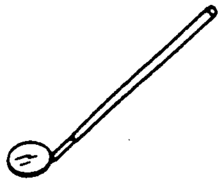
J-3



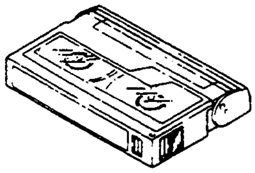
J-4



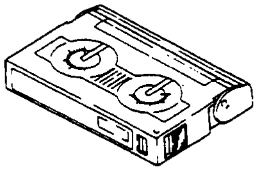
J-5



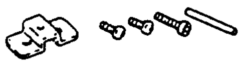
J-6



J-9

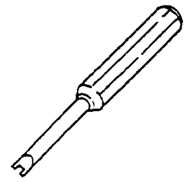


J-10

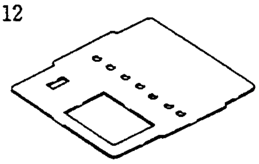


(Attached to the maintenance rotary upper drum)

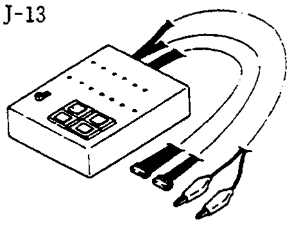
J-11



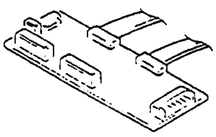
J-12



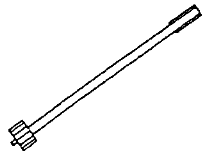
J-13



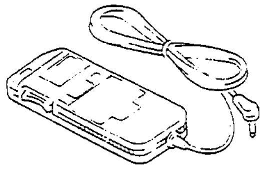
J-14



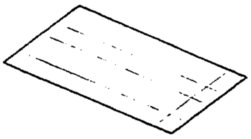
J-15



J-16



J-17



## 3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

**Note** : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

**Note** : The modes in ☐ are those set by pressing the mode selector buttons.

### 3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

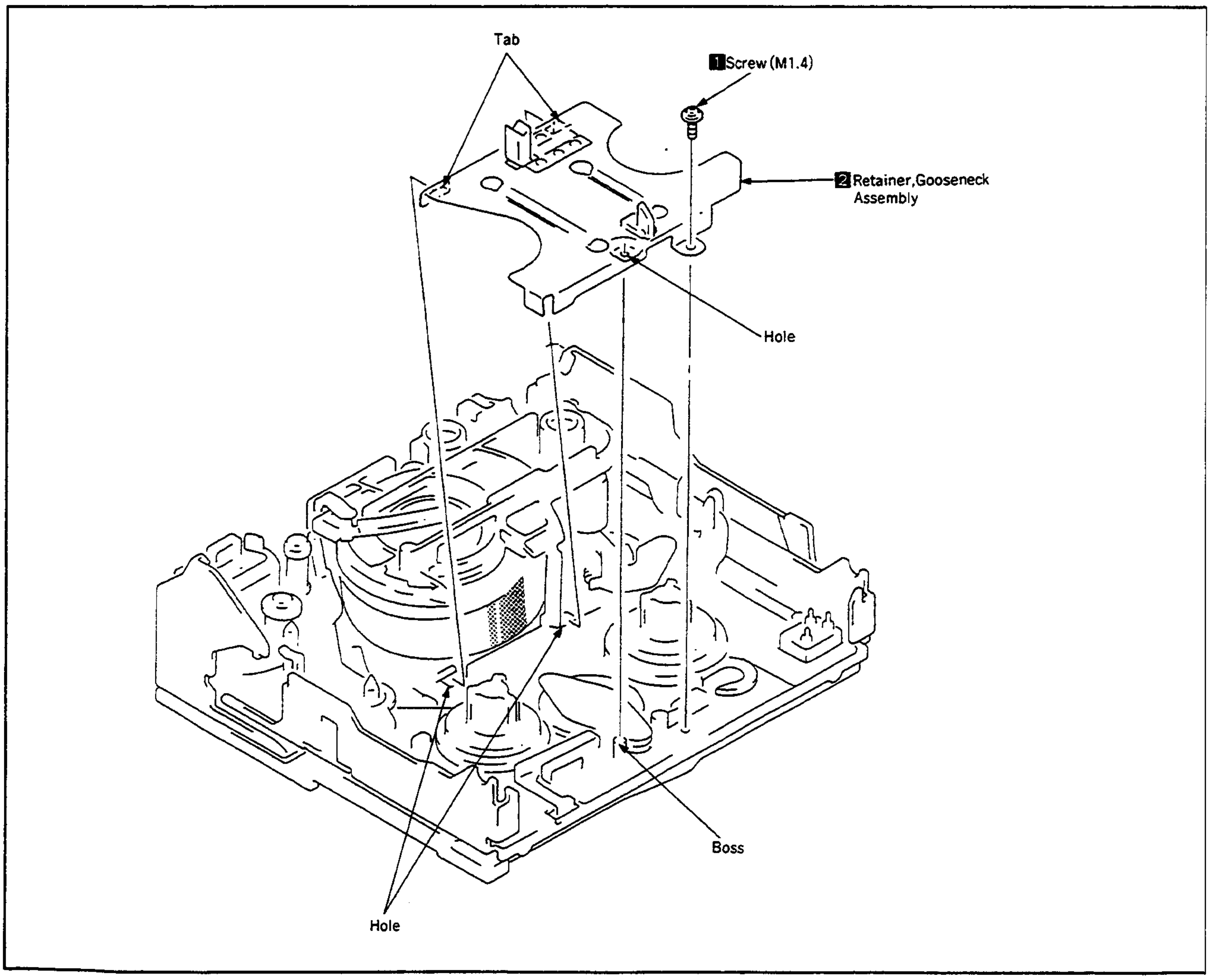


Fig. 8

## 3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws **1**, then the protector base assembly **2**.

### 2. Mounting

1) Mount the protector base assembly **2** with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder **3**.
2) Tighten two screws **1**.
3) Referring to 1-1, mount the cassette compartment assembly.

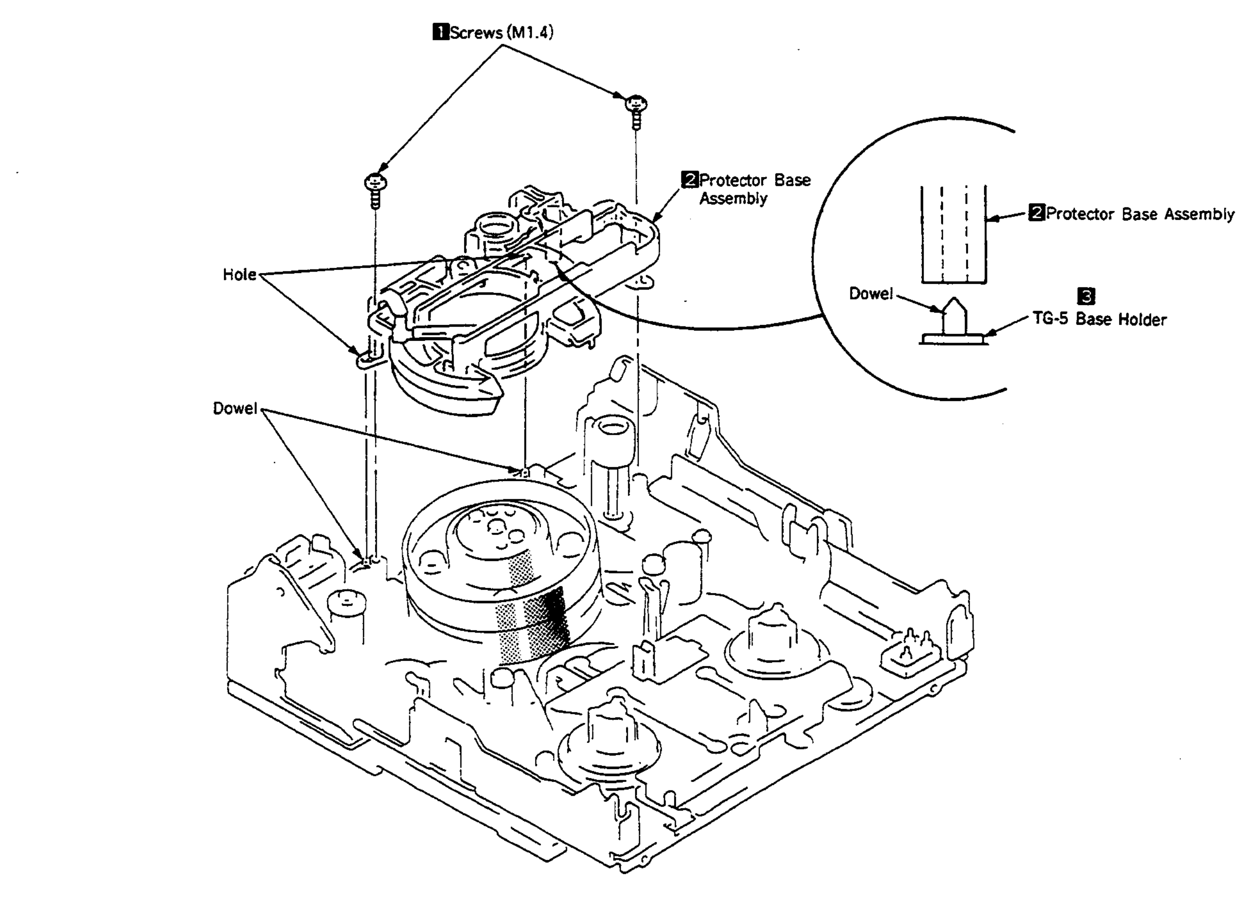

1 Screws (M1.4)
2 Protector Base Assembly
Hole
Dowel
2 Protector Base Assembly
Dowel
3 TG-5 Base Holder

Fig. 9

### 3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

**Note :** Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

**Note :** Do not touch the outer surfaced of drum (hold portions Ⓐ and Ⓑ of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

**Note :** Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

**Note :** In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

**Note :** After mounting, make tape path adjustment in Section 4.

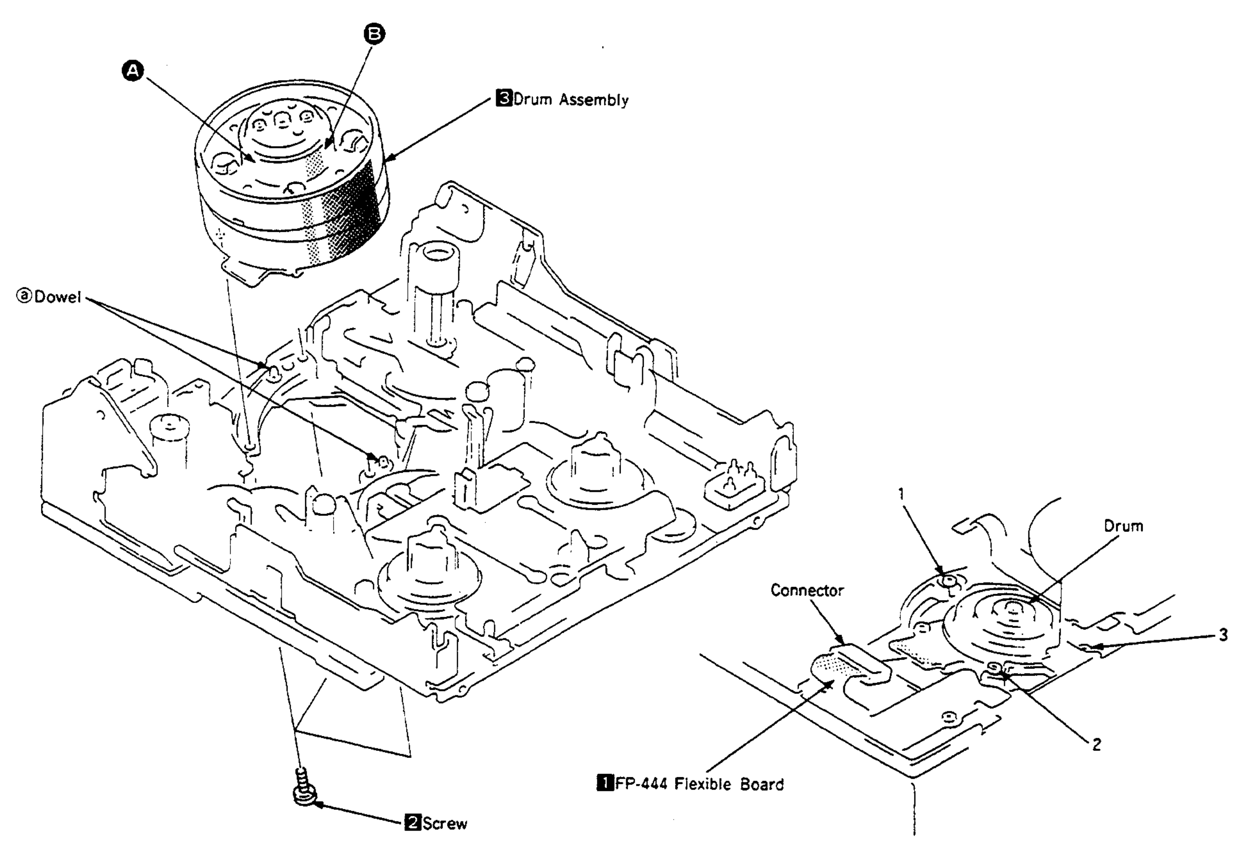


Fig. 10

## 3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

### 2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre
3.

**Note :** In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

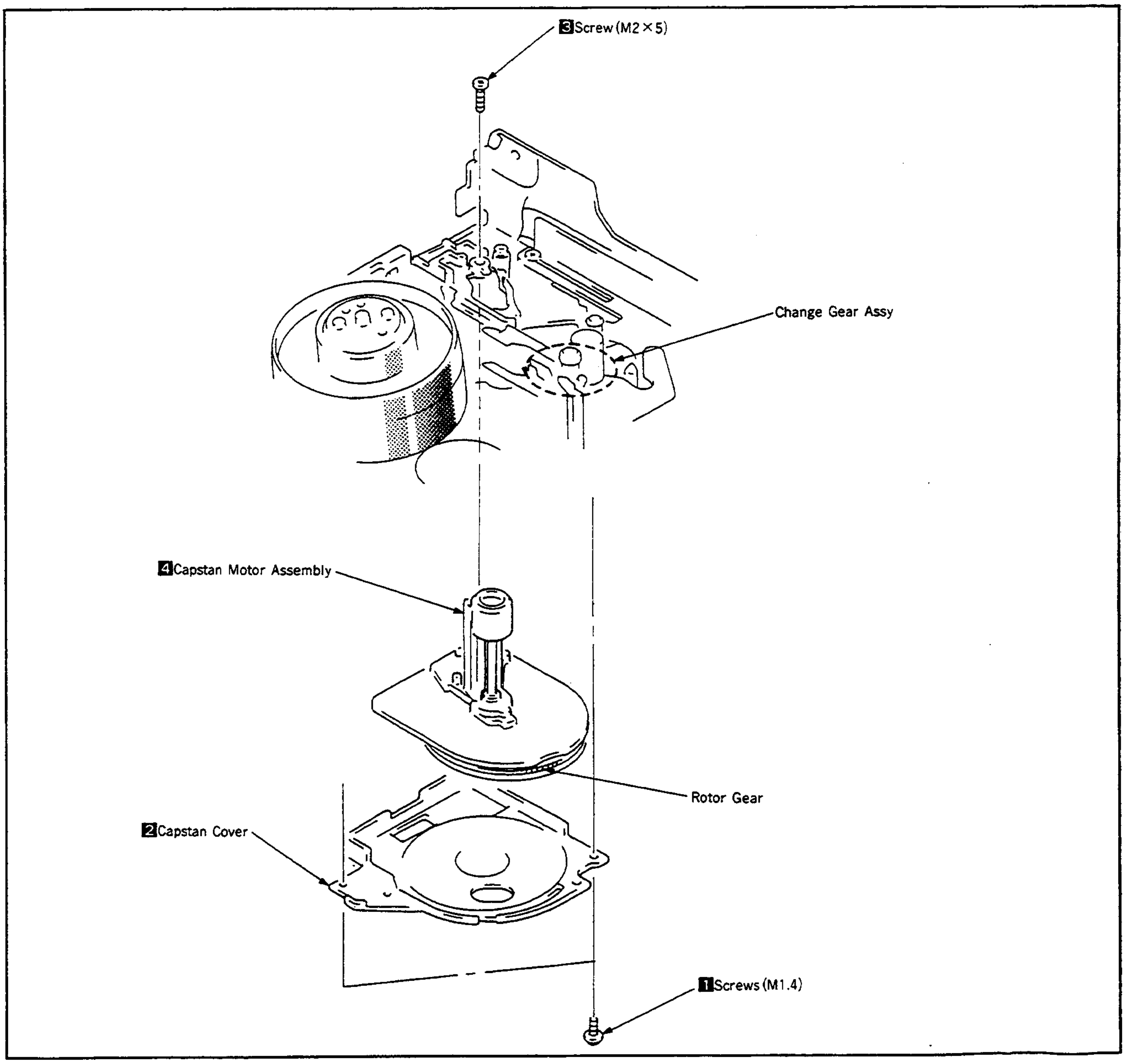

3 Screw (M2 × 5)
Change Gear Assy
4 Capstan Motor Assembly
Rotor Gear
2 Capstan Cover
1 Screws (M1.4)

Fig. 11

## 3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly ❶.
4) Remove the T soft assembly ❷, then the T soft arm ❸.

### 2. Mounting

1) Mount the T soft arm ❸ with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly ❷ with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly ❶ and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

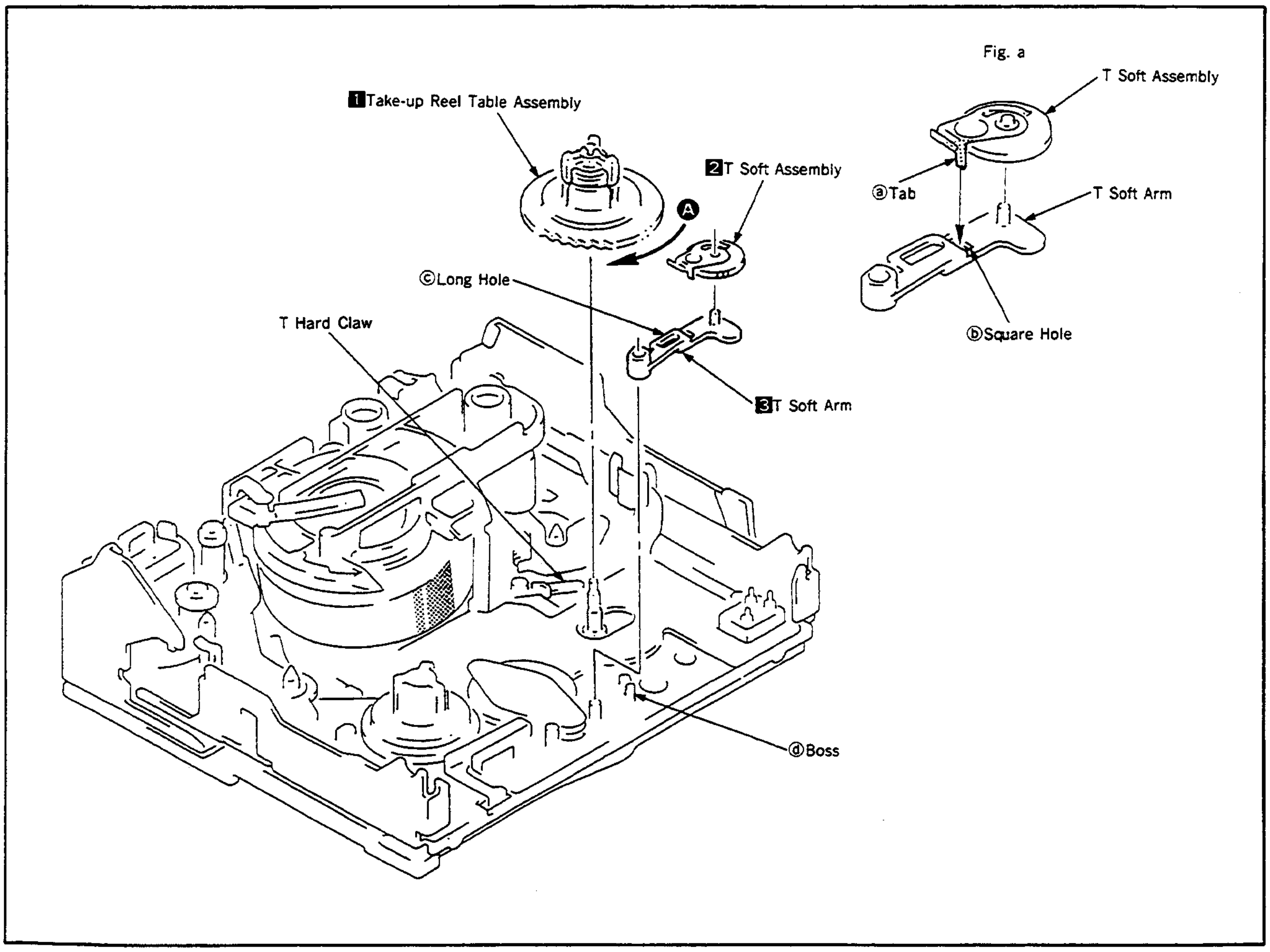


Fig. a
T Soft Assembly
ⓐTab
T Soft Arm
ⓑSquare Hole
❶Take-up Reel Table Assembly
❷T Soft Assembly
Ⓐ
ⓒLong Hole
T Hard Claw
❸T Soft Arm
ⓓBoss

Fig. 12

## 3-6. PINCH ARM ASSEMBLY (Fig. 13)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the READY mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

### 2. Mounting

1) Select the READY mode.
2) Hooking a spring of pinch arm assembly ❷ to the casse positioning boss on the chassis, mount the pinch arm asser bly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

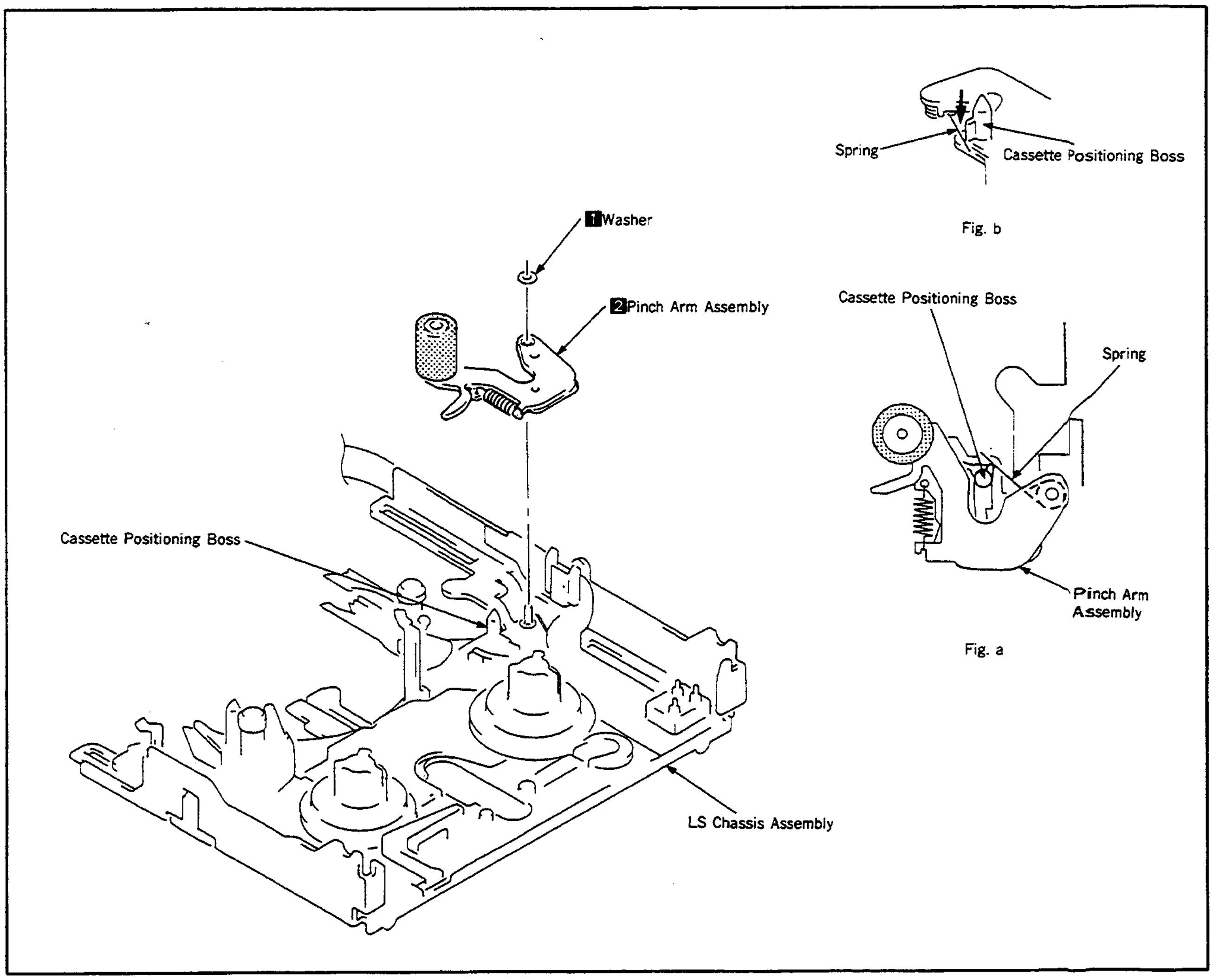

Spring
Cassette Positioning Boss
Fig. b
❶Washer
❷Pinch Arm Assembly
Cassette Positioning Boss
Spring
Pinch Arm Assembly
Fig. a
Cassette Positioning Boss
LS Chassis Assembly

Fig. 13

## LS CHASSIS ASSEMBLY (Fig. 14)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw 1, TG-5 base holder 2, and LS flexible board 3.
5) Remove a lock washer 4, then the gooseneck as sembly 5.
6) Remove four screws 6, then the LS chassis assembly 7.

### 2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly 7 on the chassis.

**Note** : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws 6.
6) Mount the LS flexible board 3 and TG-5 base holder 2,then tighten the screw 1.
7) Mount the Gooseneck assembly 5 and fix it with a washer 4.

**Note** : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

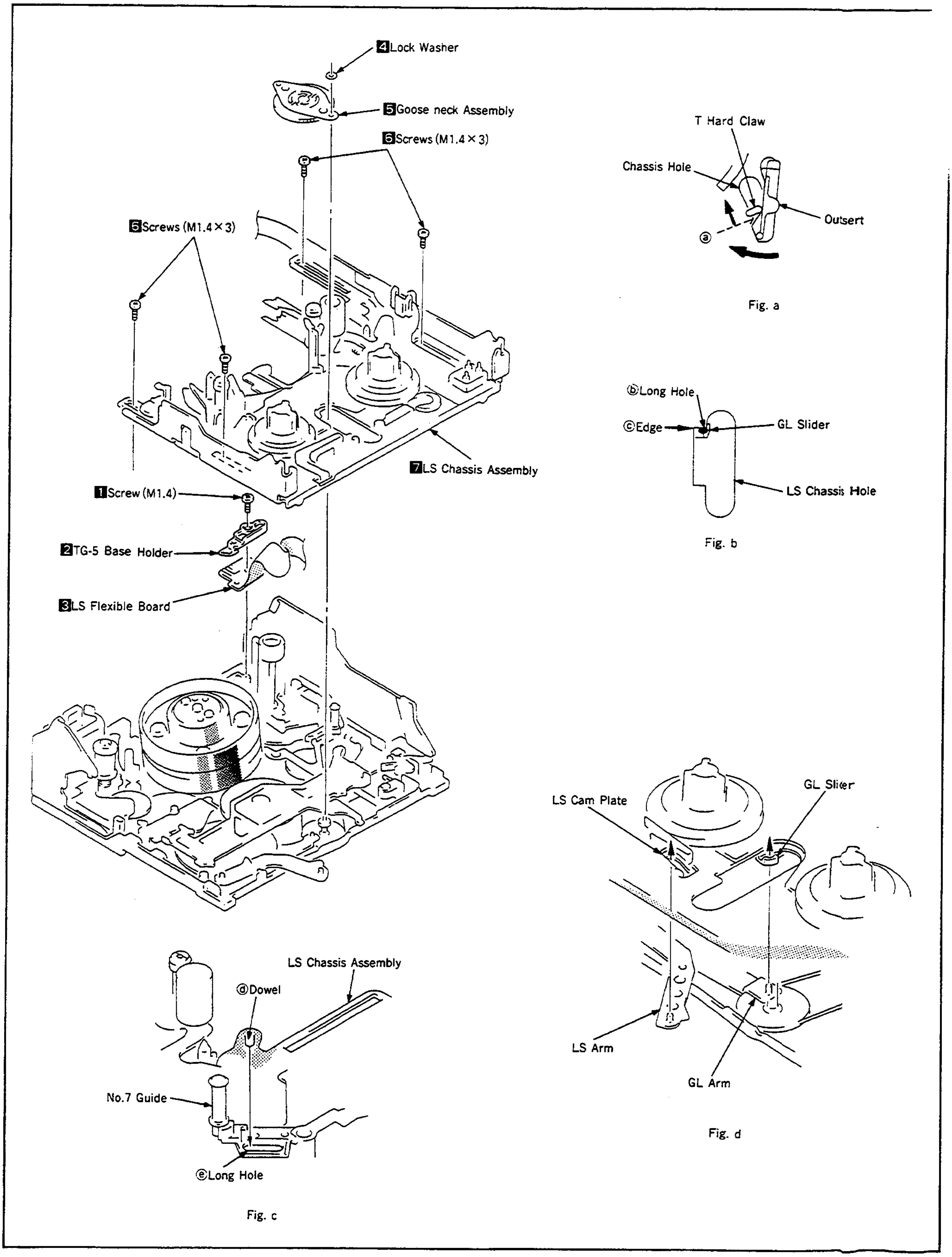

4 Lock Washer
5 Goose neck Assembly
6 Screws (M1.4×3)
6 Screws (M1.4×3)
7 LS Chassis Assembly
1 Screw (M1.4)
2 TG-5 Base Holder
3 LS Flexible Board
T Hard Claw
Chassis Hole
Outsert
ⓐ
ⓑ Long Hole
ⓒ Edge
GL Slider
LS Chassis Hole
LS Chassis Assembly
ⓓ Dowel
No.7 Guide
ⓔ Long Hole
LS Cam Plate
GL Slider
LS Arm
GL Arm

Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

## 3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

### 2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

**Note** : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note** : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

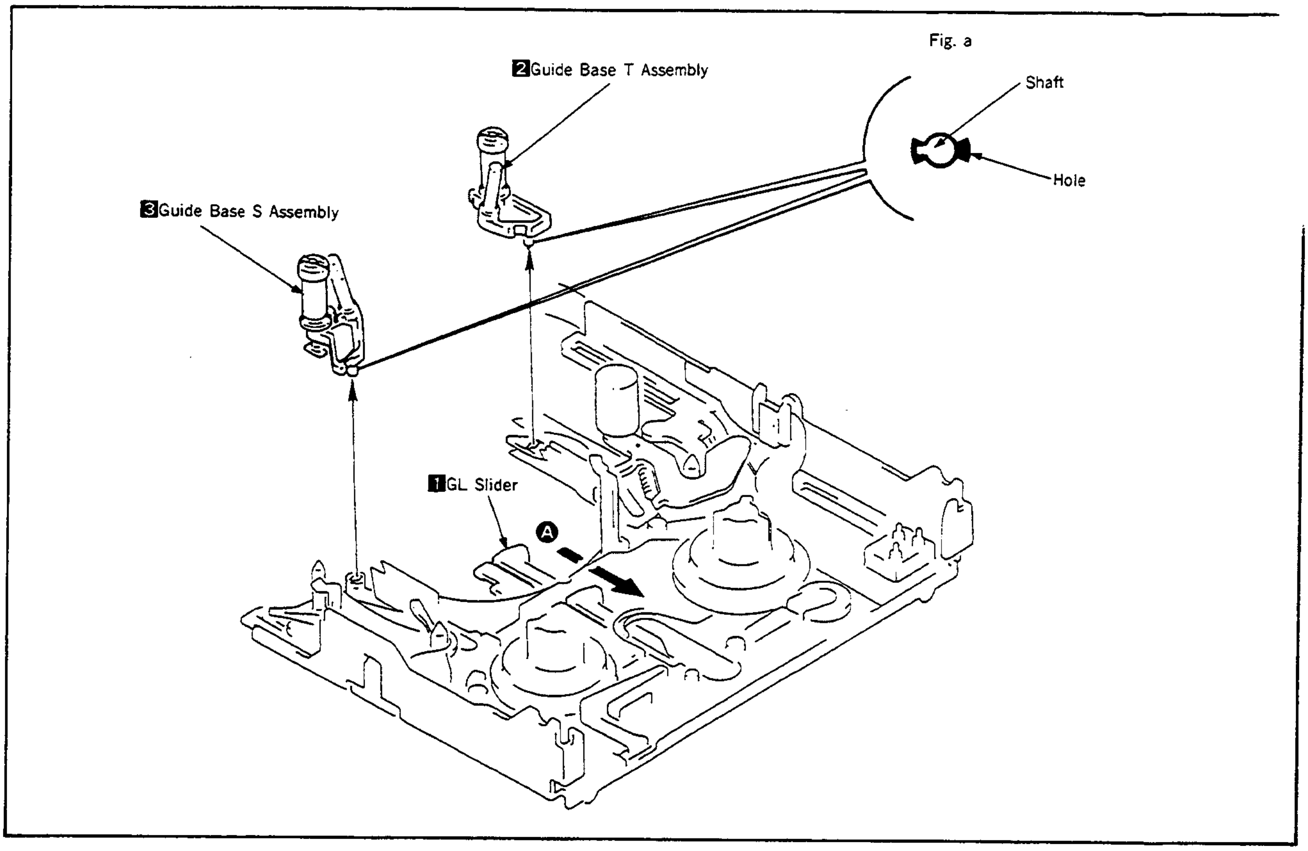


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

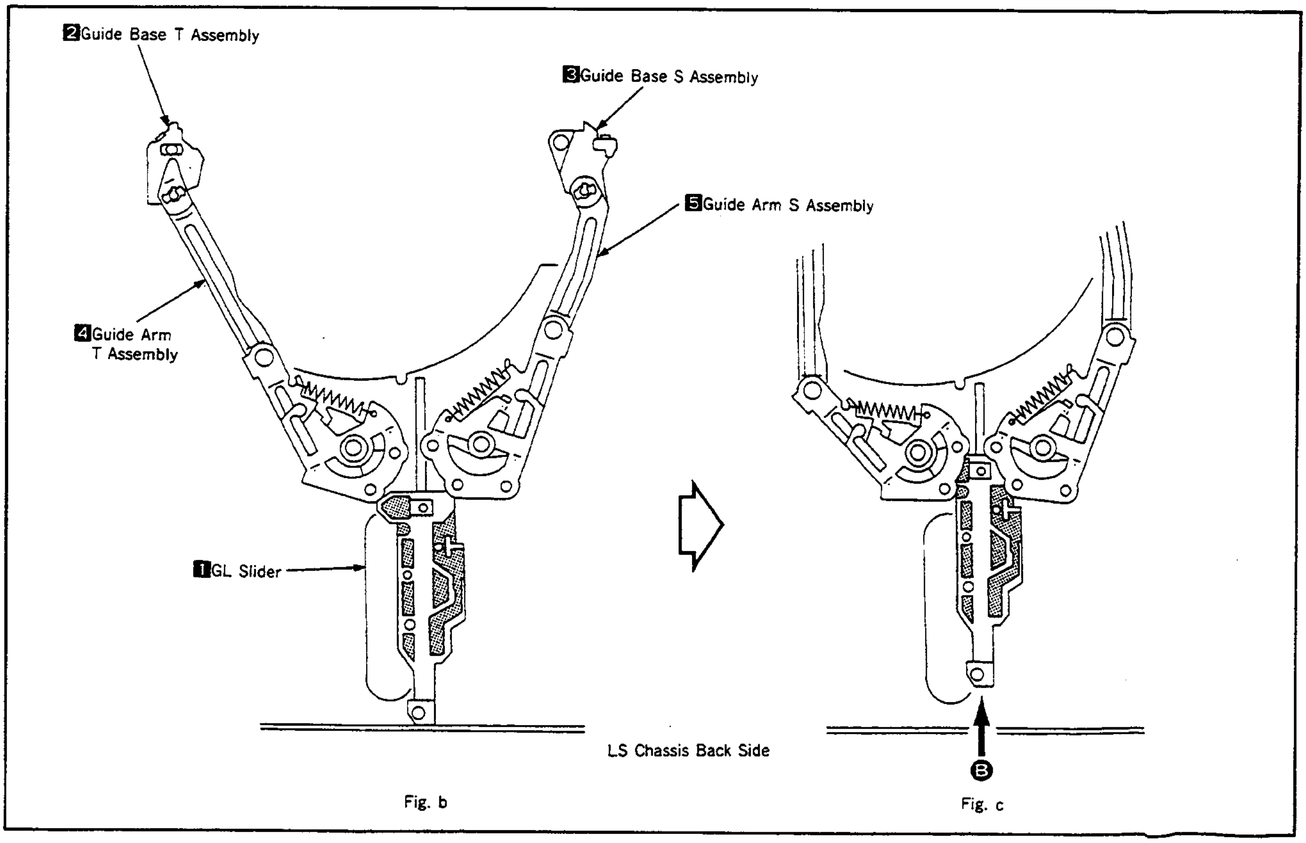

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B

Fig. b

Fig. c

Fig. 16

## 3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers ❶, then the guide arm T assembly ❷ and guide arm S assembly ❸ respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

### 2. Mounting

1) Mount the guide arm T assembly ❷ and guide arm S assembly ❸, then fix them with a lock washer ❶ respectively.

**Note :** Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

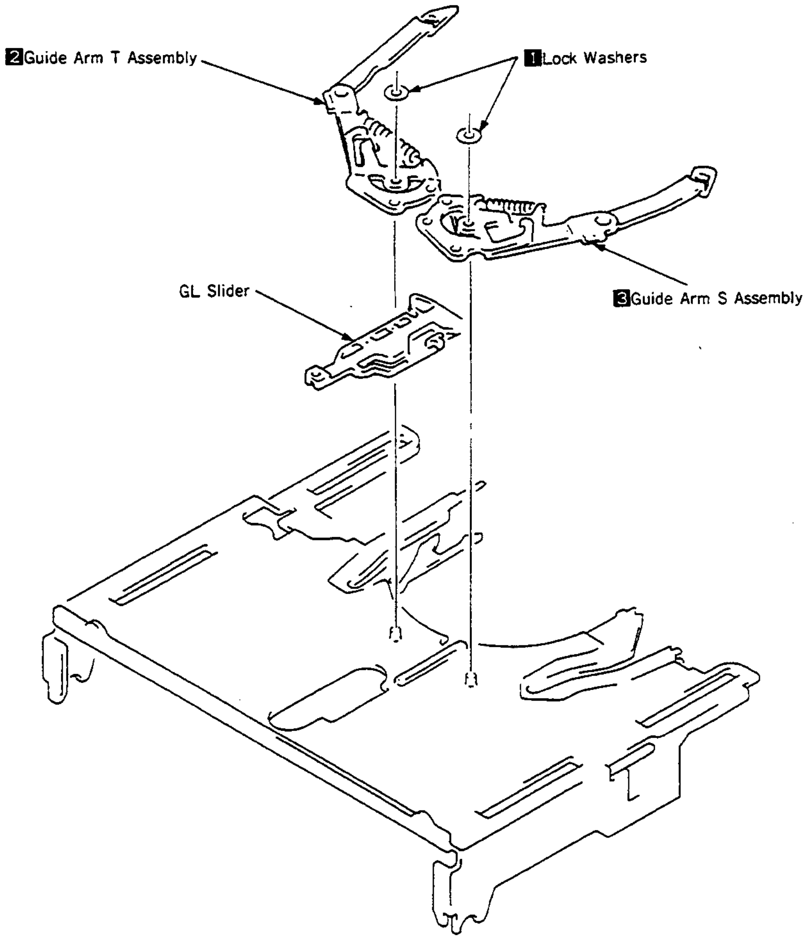


Fig. 17

## 3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw ❶, then the string ❷ from the supply reel table assembly ❸. For easy removal of string block ❹, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly ❸.
8) Remove a tension coil spring ❺.
9) Turn the TG-1 arm assembly ❻ up to a portion ⓒ of LS chassis hole in the arrow 🅐 direction so that its tab ⓑ can be disengaged (Fig. b).

### 2. Mounting

1) Pushing the S soft brake ❼ toward the arrow 🅑, mount thesupply reel table assembly ❸.
2) Route the string ❷ under the TG-1 arm asembly ❻, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow 🅐 (Fig. b).
3) Wind the string ❷ along the groove of supply reel t assembly ❸ (Fig. a).

**Note :** Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block ❹ toward the arrow 🅒 and tighten the screw ❶ (Fig. a).
5) Engage the tension coil spring ❺ to the chassis hook.

**Note :** Confirm that the string ❷ is surely wound around the groove of supply reel table assembly ❸ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

**Note :** At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

**Note :** Referring to 3-22, adjust the tension regulator position.

**Note :** Referring to 3-23, adjust the forward back tension.

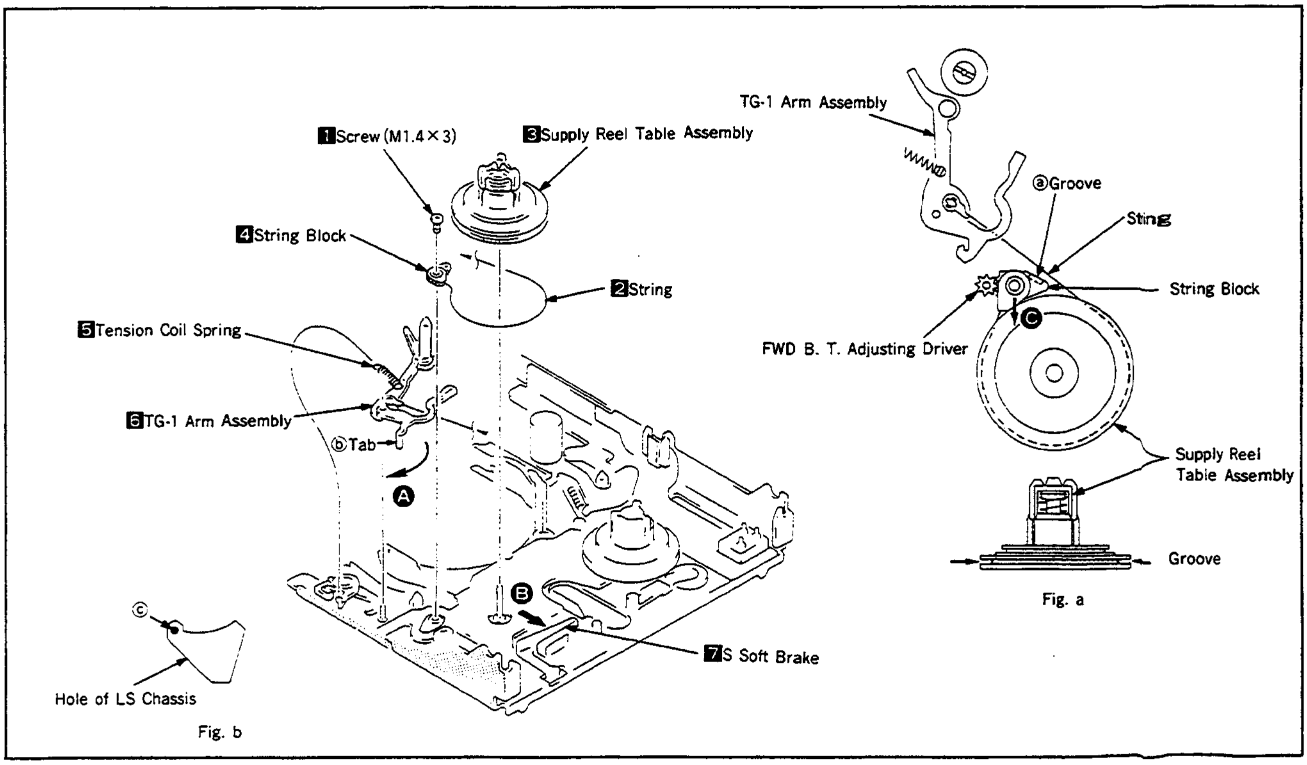

❶Screw (M1.4×3)
❸Supply Reel Table Assembly
❹String Block
❷String
❺Tension Coil Spring
❻TG-1 Arm Assembly
ⓑTab
🅐
🅑
❼S Soft Brake
ⓒ
Hole of LS Chassis
Fig. b
TG-1 Arm Assembly
ⓐGroove
Sting
String Block
🅒
FWD B. T. Adjusting Driver
Supply Reel Table Assembly
Groove
Fig. a

Fig. 18

## 3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

### 1. Removal

1) Remove the TG-2 roller assembly ❶ .
2) Remove a compression coil spring ❷ .

### 2.Mounting

1) Insert a compression coil spring ❷ into the boss on chassis.
2) Rotate gently the TG-2 roller assembly ❶ until the screw is engaged.

### 3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

**Note** : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

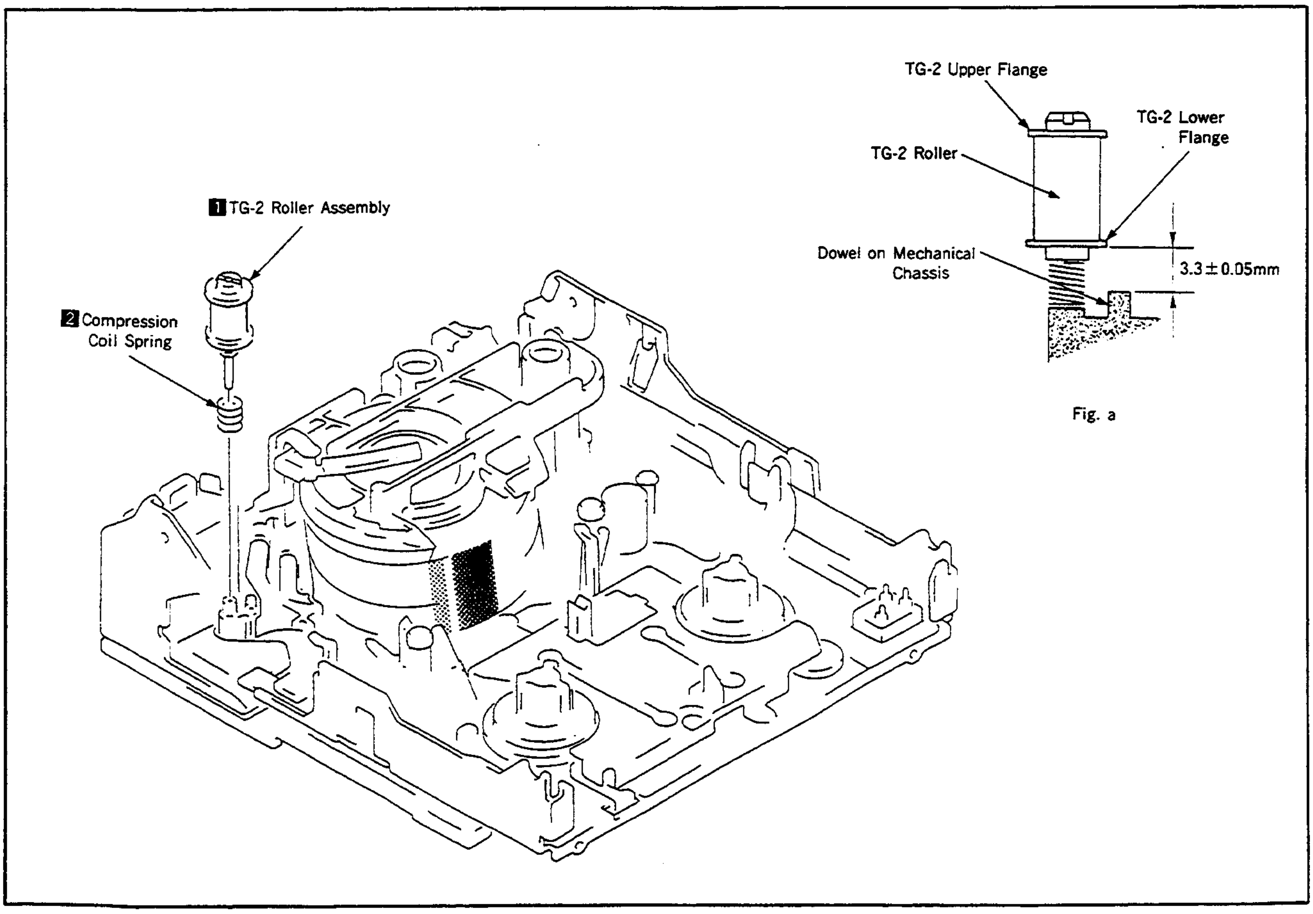

❶TG-2 Roller Assembly
❷Compression Coil Spring
TG-2 Upper Flange
TG-2 Lower Flange
TG-2 Roller
Dowel on Mechanical Chassis
3.3±0.05mm
Fig. a

Fig. 19

### 3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring **1** in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly **2** from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly **2** to the shaft of mechani chassis.
2) Mount the TG-7 arm Leaf spring **1** to the mechanicalcha sis.
   *Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

**Note** : After mounting, perform 4. TAPE PATH ADJUSTMENT.

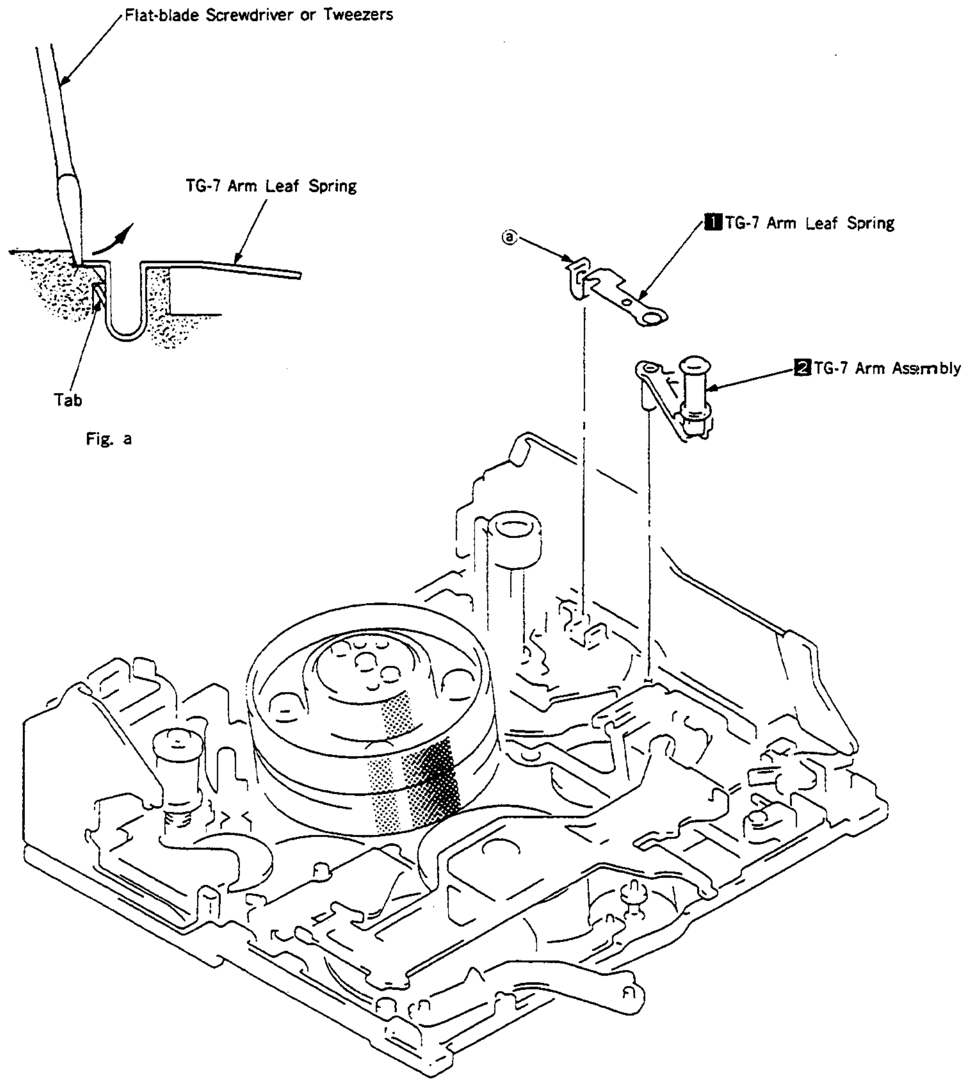


Fig. 20

## 3 . LM MOTOR ASSEMBLY (Fig. 21)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the LOAD mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

### 2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

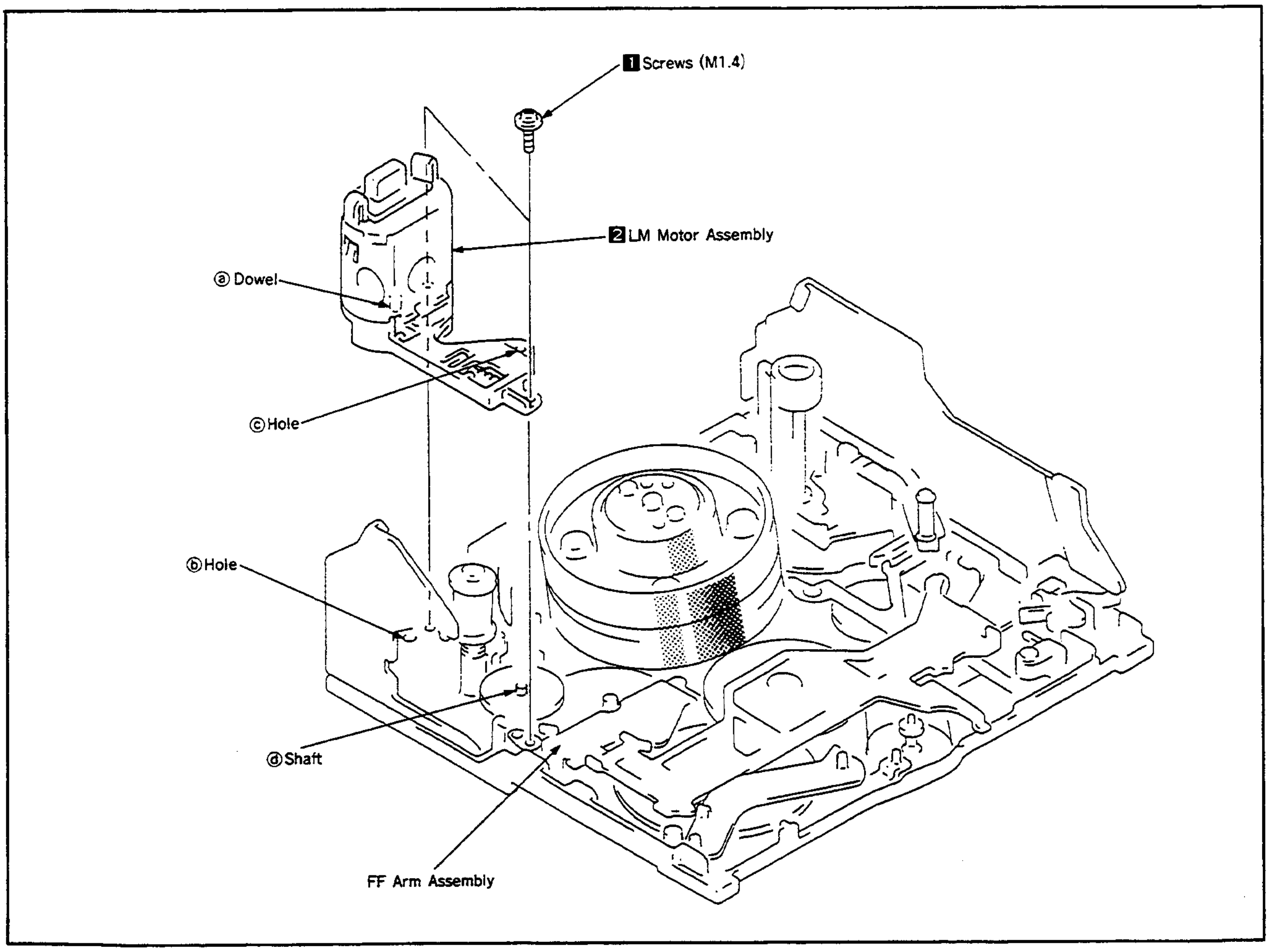


Fig. 21

## 3-14. LS ARM (Fig. 22)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

**Note** : Take care not to drop the LS roller ❷.

### 2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh and cam groove.

**Note** : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

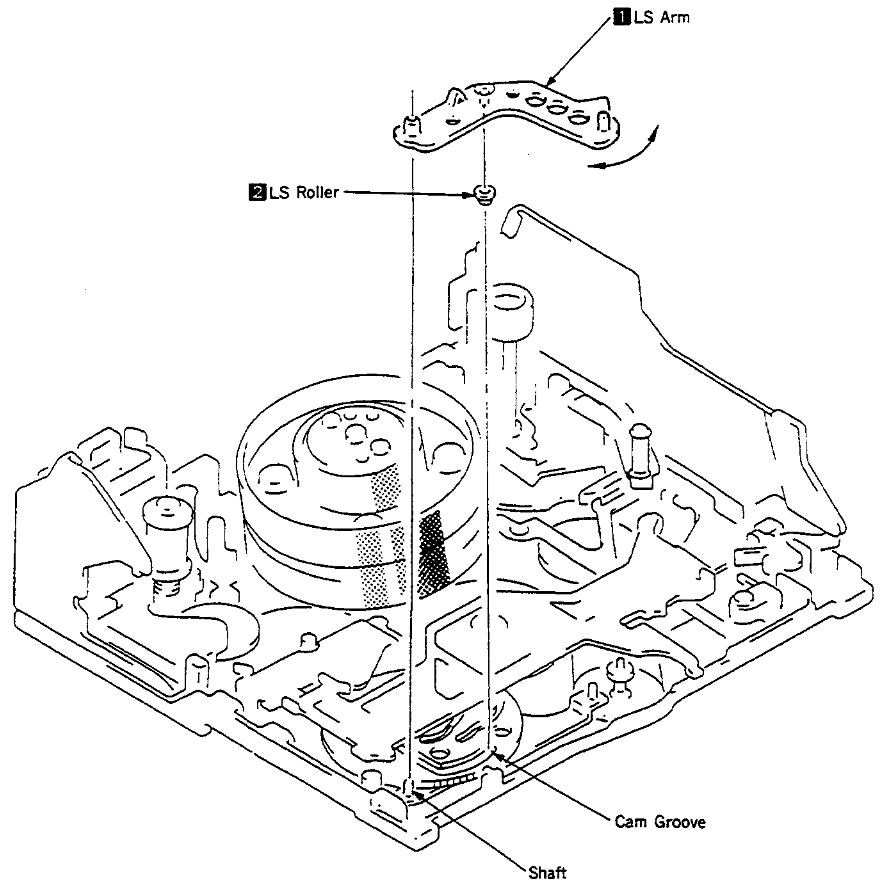


Fig. 22

## M SLIDER ASSEMBLY (Fig. 23)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws ❶, then the gear holder ❷.
6) Remove two lock washers ❸, then the M slider assembly ❹.

### 2. Mounting

1) Mount the M slider assembly ❹, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers ❸.
3) Mount the gear holder ❷ with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

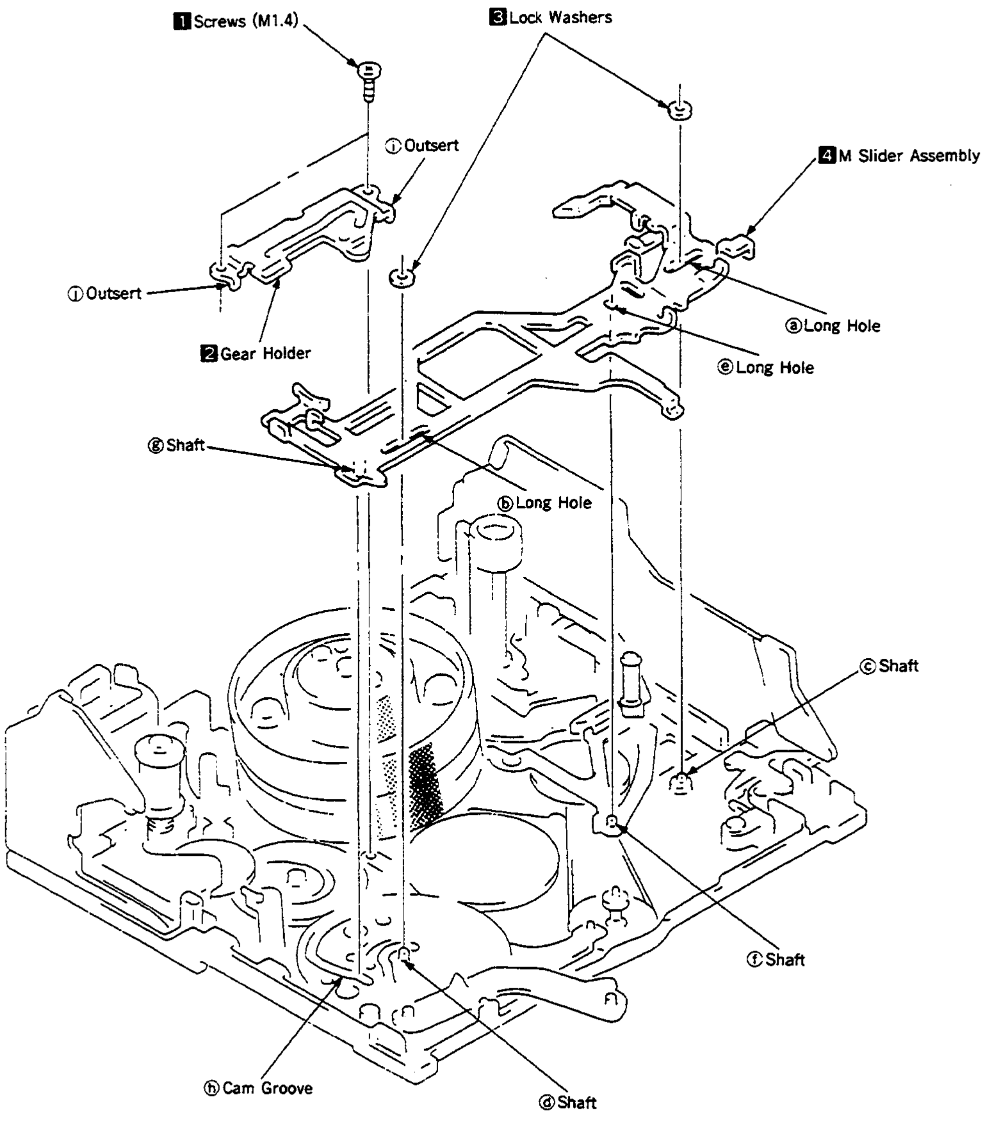

❶ Screws (M1.4)
❸ Lock Washers
ⓘ Outsert
❹ M Slider Assembly
ⓙ Outsert
❷ Gear Holder
ⓐ Long Hole
ⓔ Long Hole
ⓖ Shaft
ⓑ Long Hole
ⓒ Shaft
ⓕ Shaft
ⓗ Cam Groove
ⓓ Shaft

Fig. 23

## 3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer **1**, then pinch press arm assembly **2**.

### 2.Mounting

1) Mount the pinch press arm assembly **2**, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer **1**.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

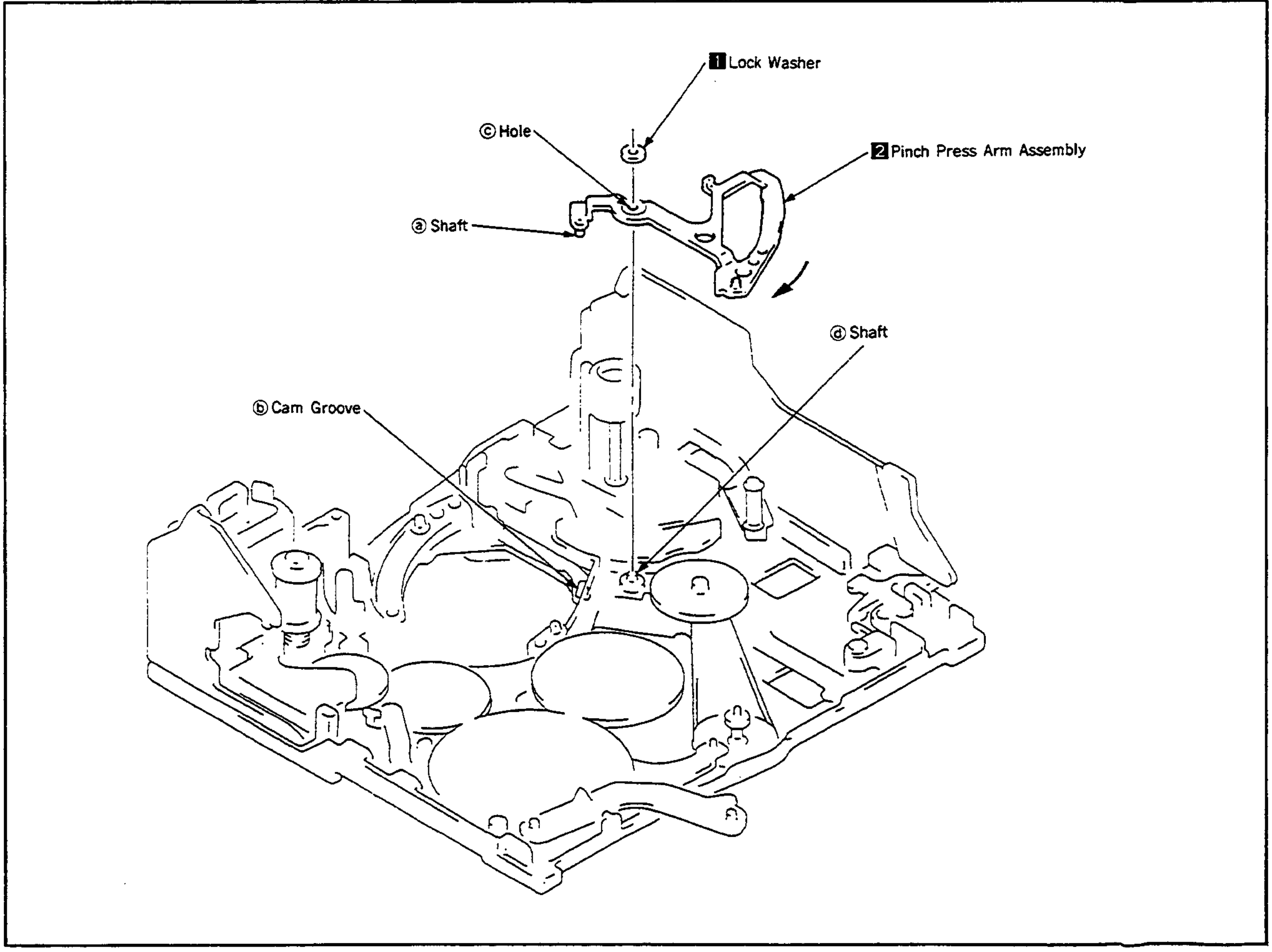


Fig. 24

## . CAM (Fig. 25)

### emoval

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam ❶.

### 2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

**Note :** Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam ❶, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

**Note :** Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

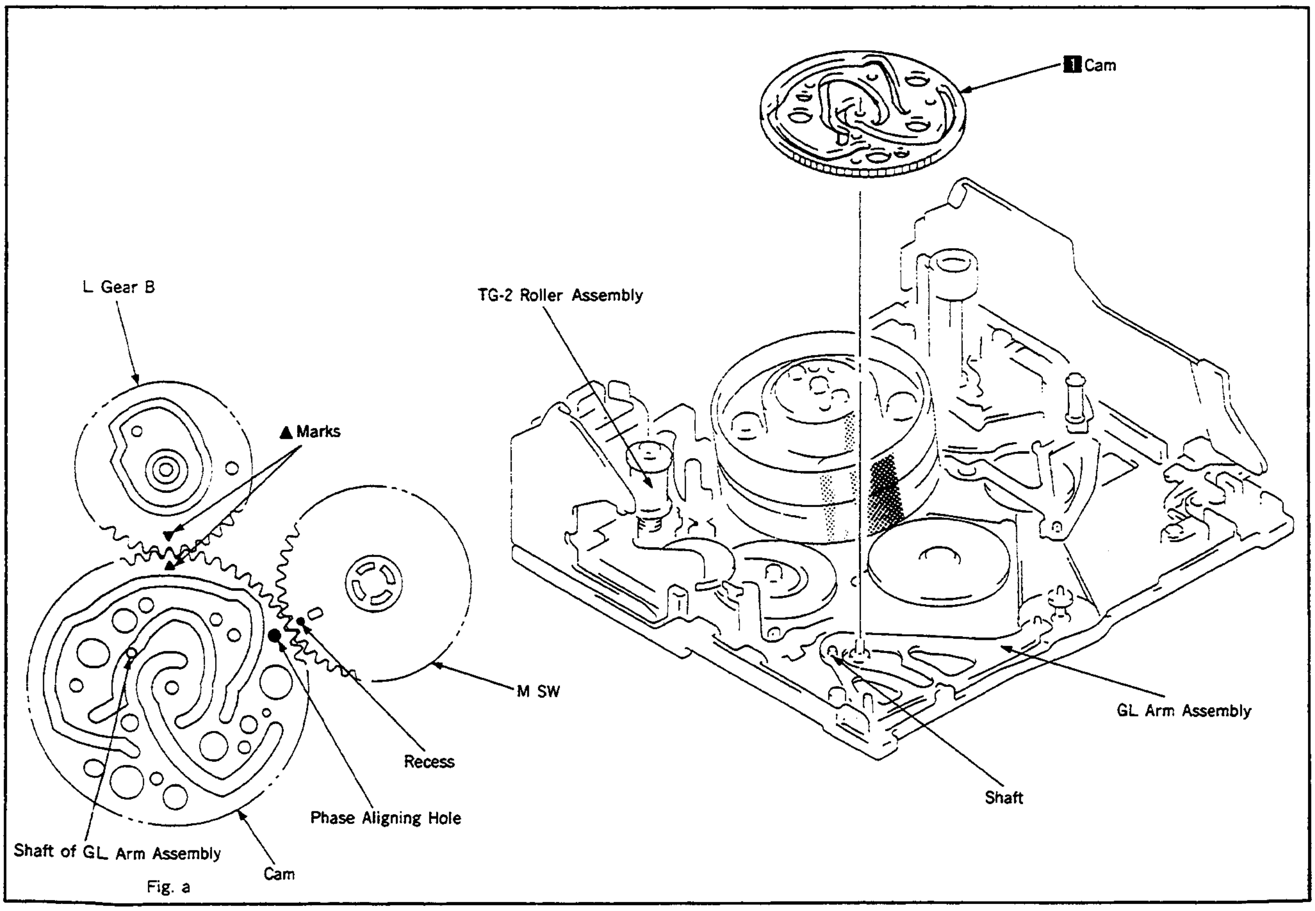


Fig. 25

### 3-18. GL ARM ASSEMBLY (Fig. 26)

#### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly ❶.

#### 2. Mounting

1) Mount the GL arm assembly ❶ with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

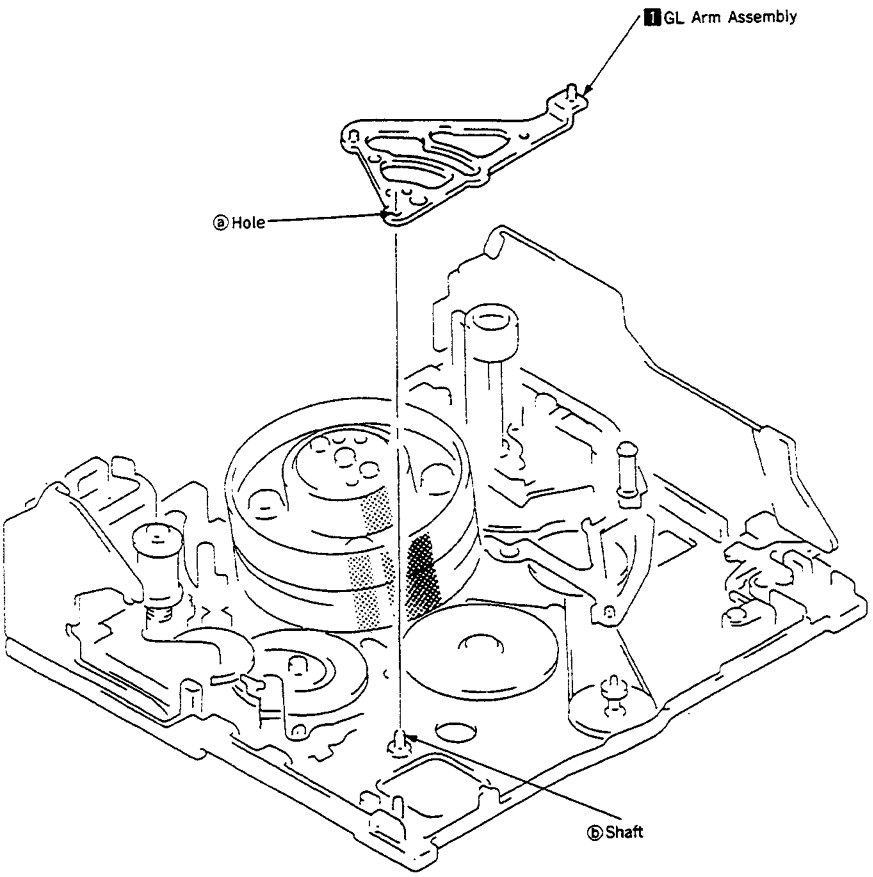


Fig. 26

## 9. L GEAR A AND L GEAR B (Fig. 27)

### Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

### 2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

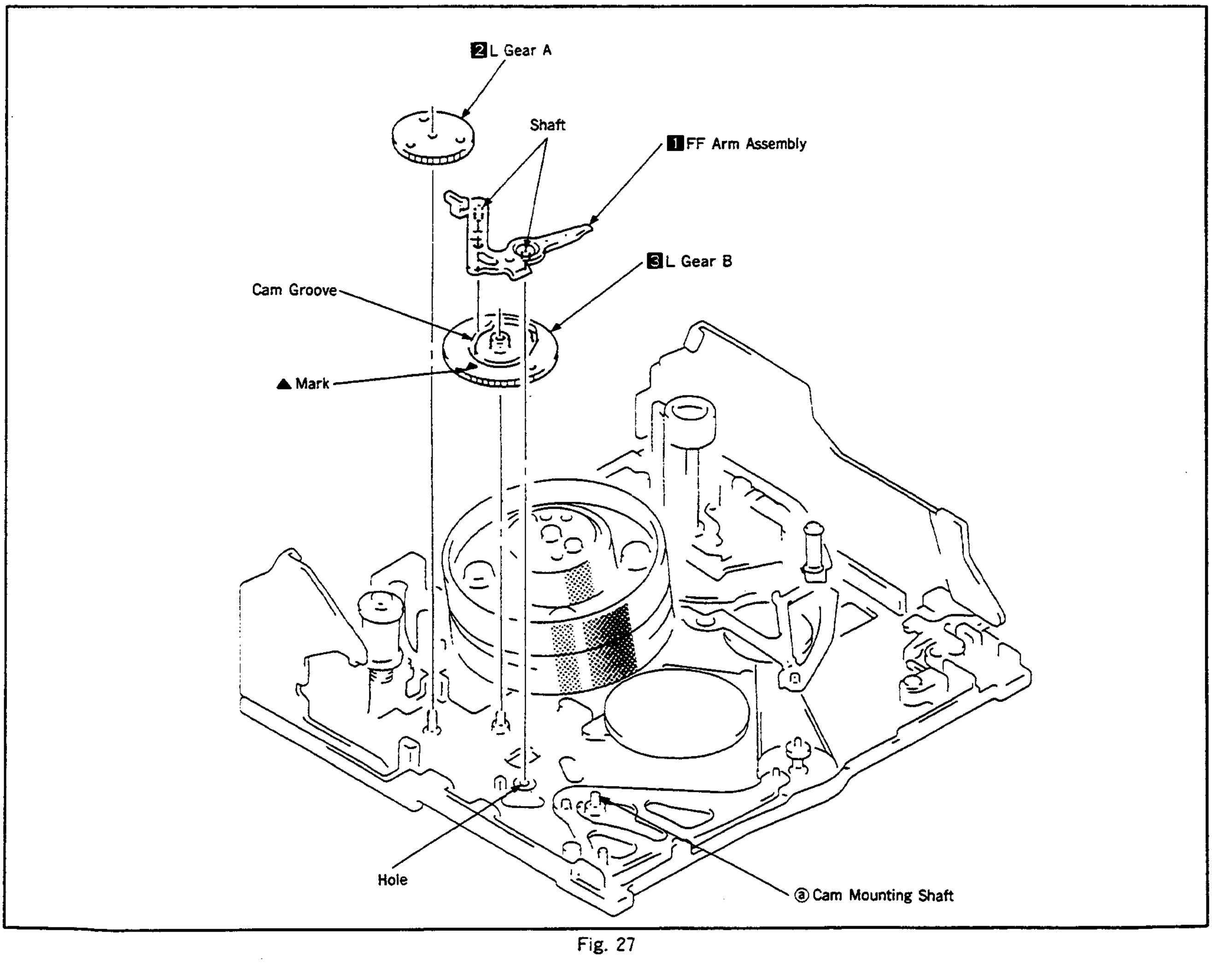


Fig. 27

## 3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

### 1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer 1, then remove together the Change gear assembly 2, relay belt 3 and relay pulley 4.

### 2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt 3 to the relay pulley 4 and Change gear assembly 2, mount respective parts.

   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

**Note** : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer 1.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

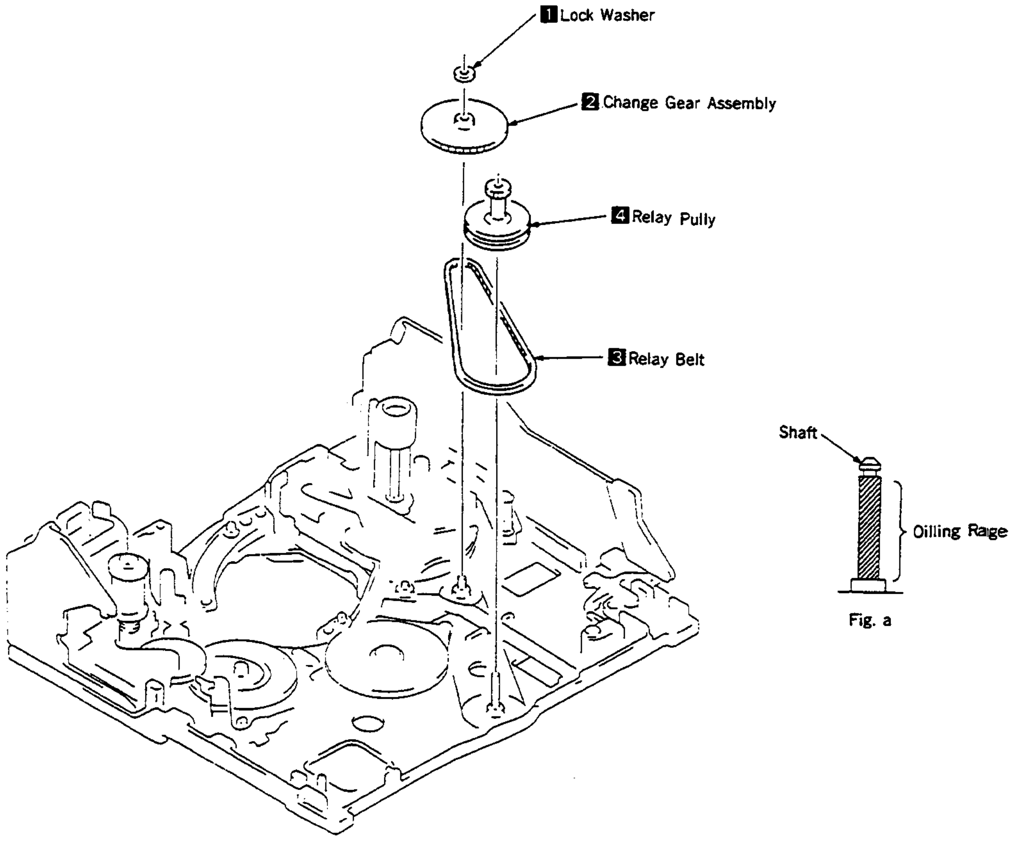


Fig. a

Fig. 28

## 3-21. ROTARY UPPER DRUM REPLACEMENT

### 1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws 1 (Fig. 29).
2) Mount the jig 2 (Ref. No. J-10) with the two supplied screws 3, then screw the attached hexagon socket screws 4 to the jig 2. The rotary upper drum 5 will move upward and come off (Fig. 30).

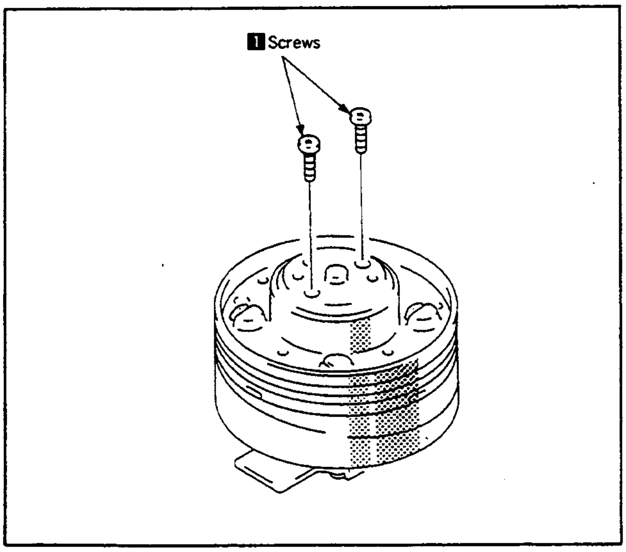


Fig. 29

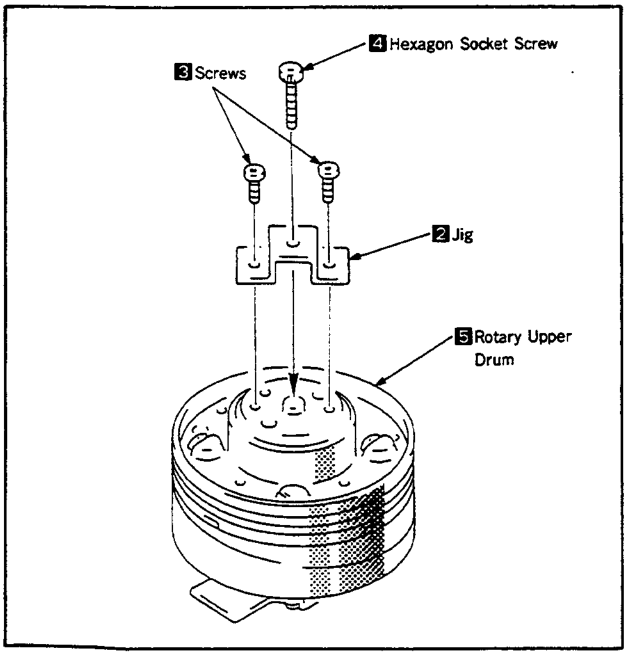


Fig. 30

### 2. Installation

1) Wipe clean the flange surface and the rotary upper drum 5 surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig 6 (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum 5 by passing the jig through its positioning hole 7. (Fig.31)
3) Remove the jig 6 and push down the rotary upper drum 5 gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws 1 alternately (Fig.29).
4) Insert the jig 6 into the positioning hole 7 again and confirm that it goes in smoothly. If it does not, loosen the two screws 1, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws 1.

**Note :** After installing, be sure to perform tape path adjustment as described in section 4.

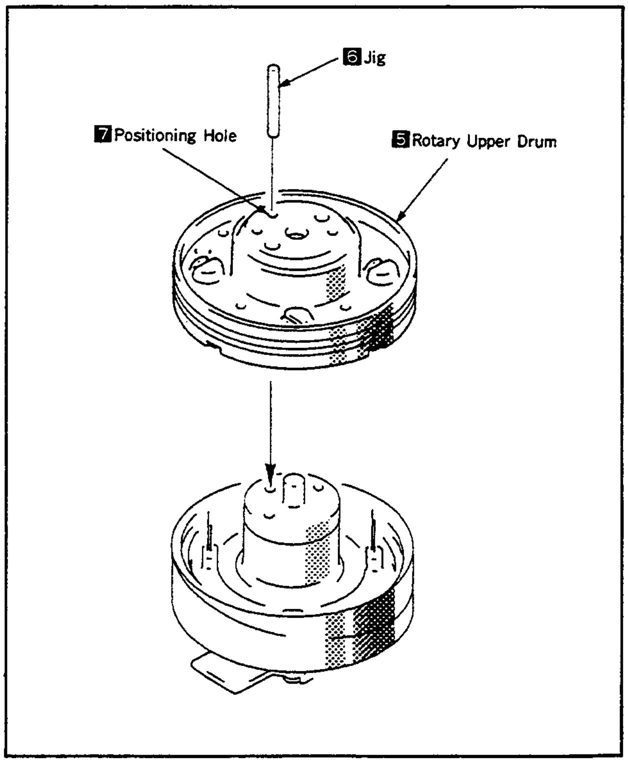


Fig. 31

### 3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ❶.

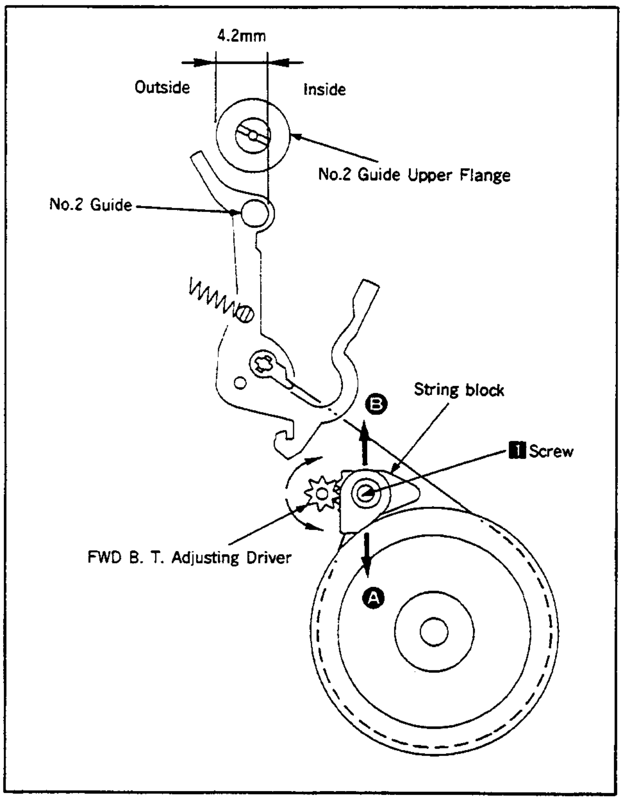

4.2mm
Outside
Inside
No.2 Guide Upper Flange
No.2 Guide
String block
Ⓑ
❶ Screw
FWD B. T. Adjusting Driver
Ⓐ

Fig. 32

### 3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

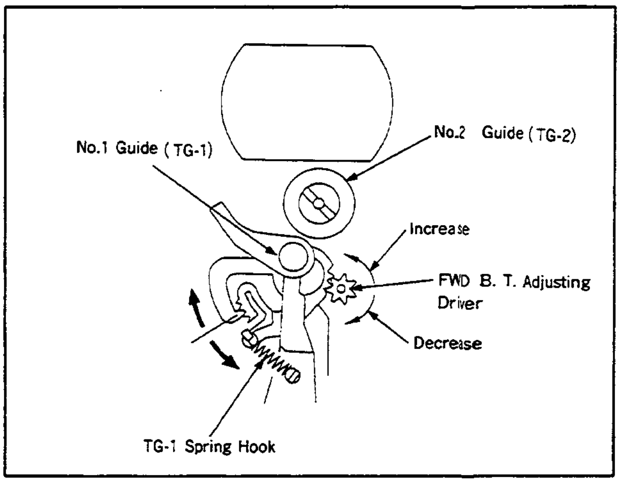

No.1 Guide (TG-1)
No.2 Guide (TG-2)
Increase
FWD B. T. Adjusting Driver
Decrease
TG-1 Spring Hook

Fig. 33

### 3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

## 4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.
This does away a tracking control knob and allows accurate track tracing.
On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.
Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series
Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

**Note** : Setting of PATH mode = TRACK SHIFT mode
If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

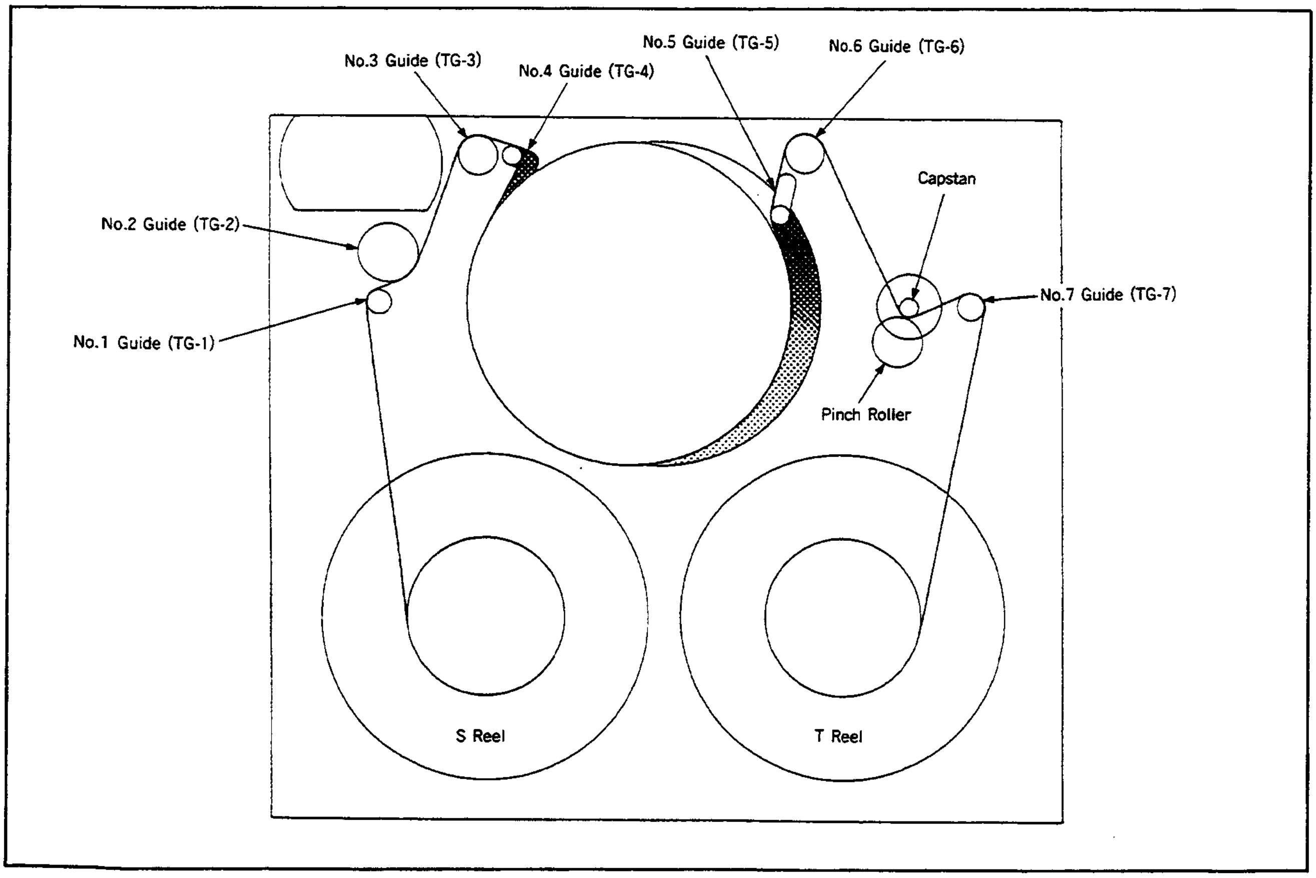


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

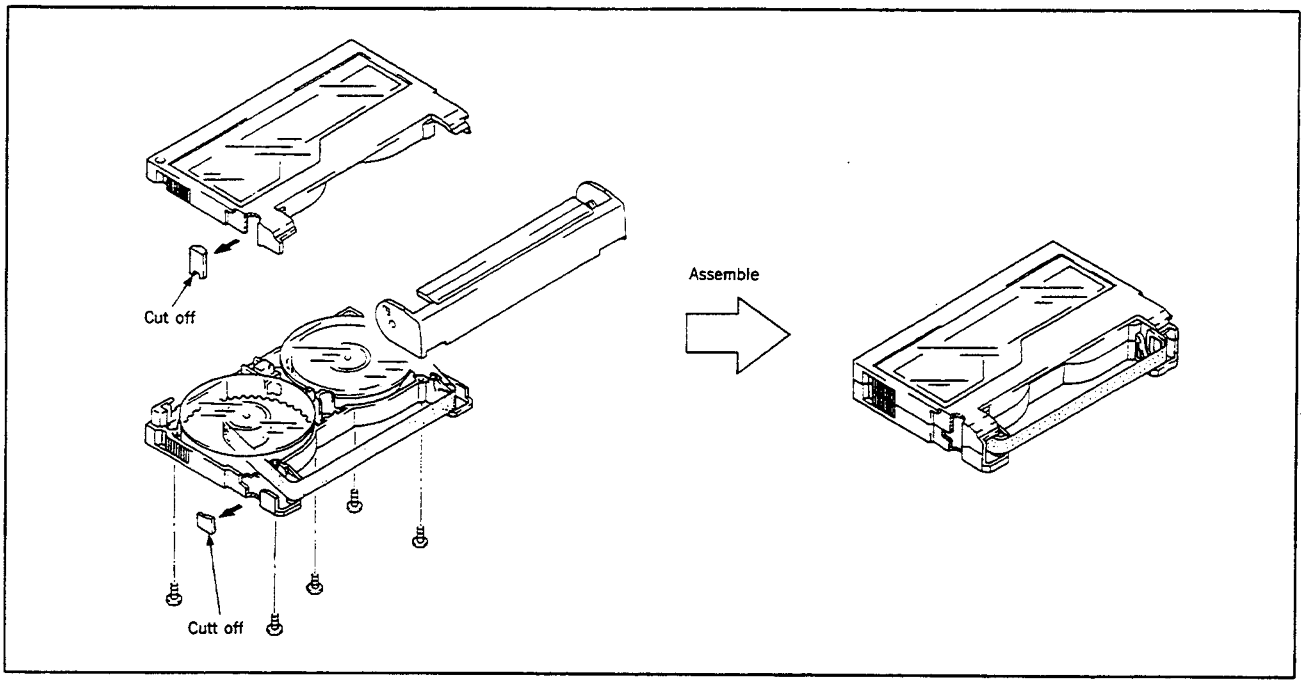


Fig. 34-B

## 4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
   CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
   CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

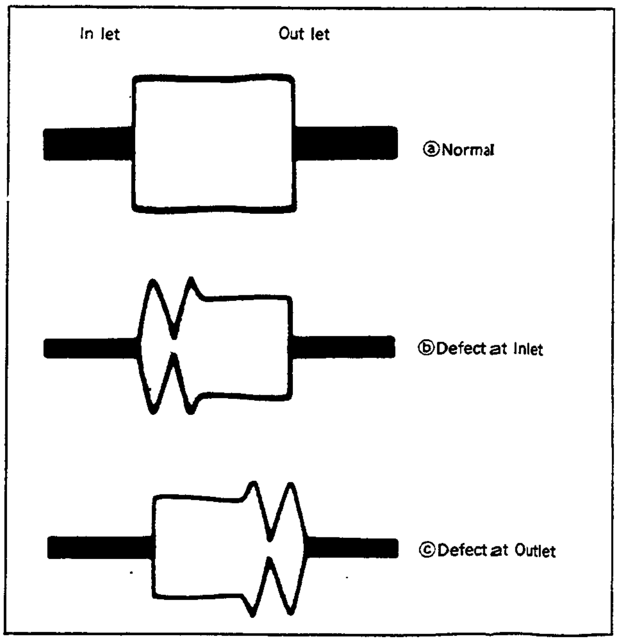


Fig. 35

## 4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw ❶ and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw ❶ to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw ❷ and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw ❷ to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

**Note** : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

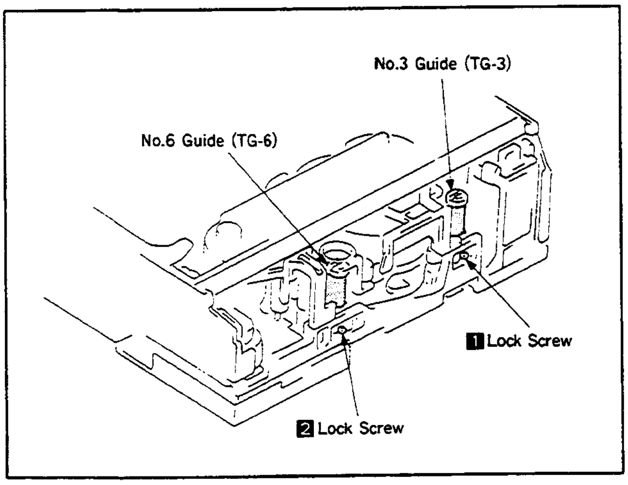


Fig. 36

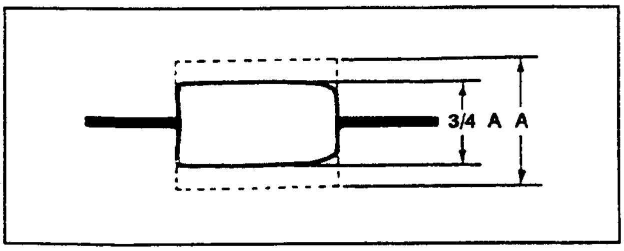


Fig. 37

## 4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

### 4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

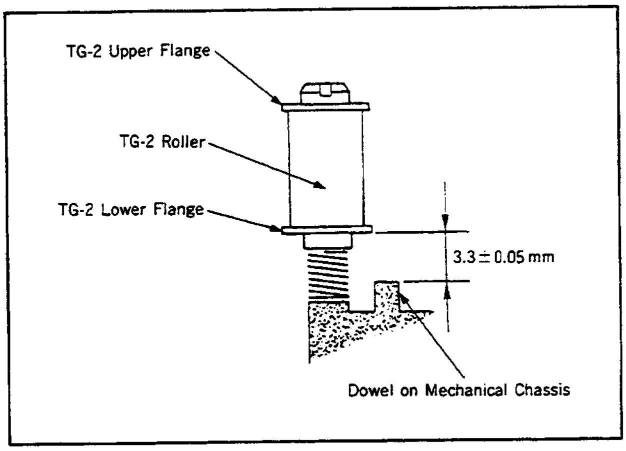


Fig. 38

**[Reference]**
**This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.**

| Guide | Guide adjustment | Rotating direction of adjustment screw |
|---|---|---|
| TG-2, 3, 6 | Raise | Counterclockwise |
| | Lower | Clockwise |
| TG-7 | Raise | Clockwise |
| | Lower | Counterclockwise |

### 4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.

   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

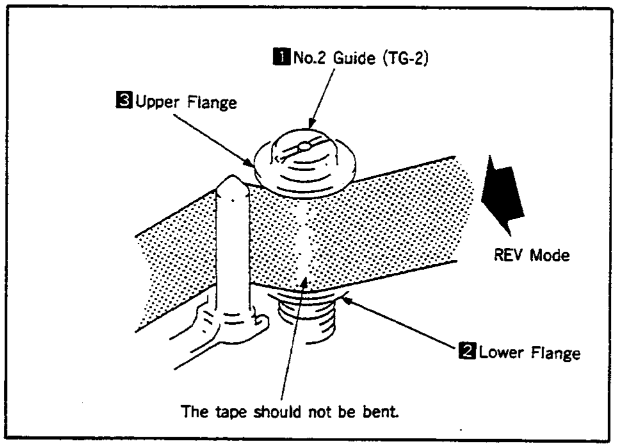


Fig. 39

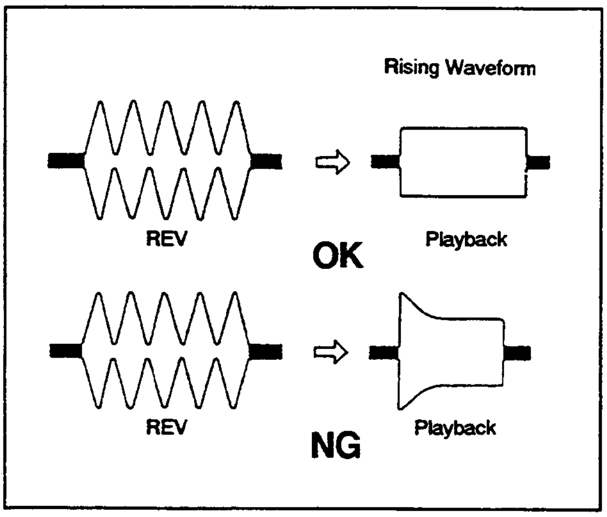


Fig. 40

### 4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

**Note** : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).

   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

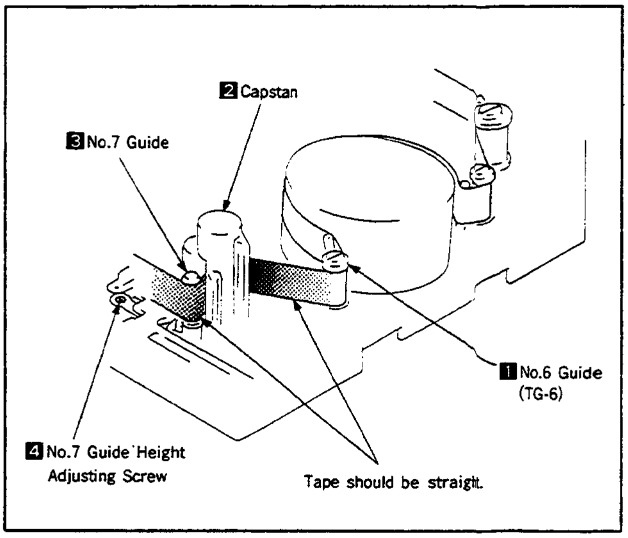


Fig. 41

### 4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).

   Otherwise, perform section 4-2 Tracking Fine Adjustment.

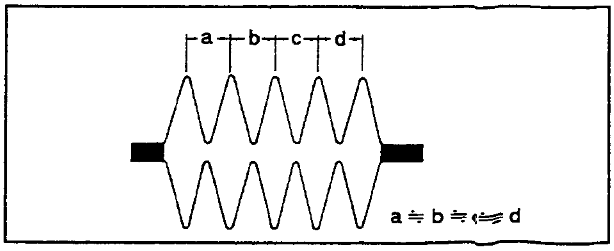


Fig. 42

## 4-6. CHECK AFTER ADJUSTMENT

### 4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

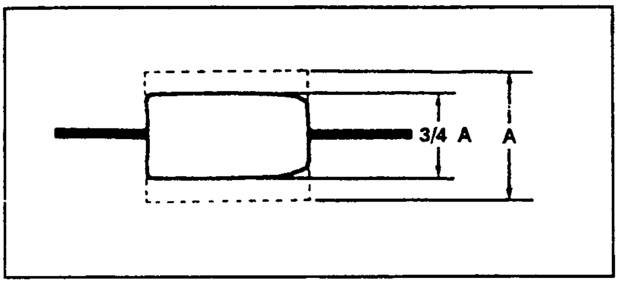
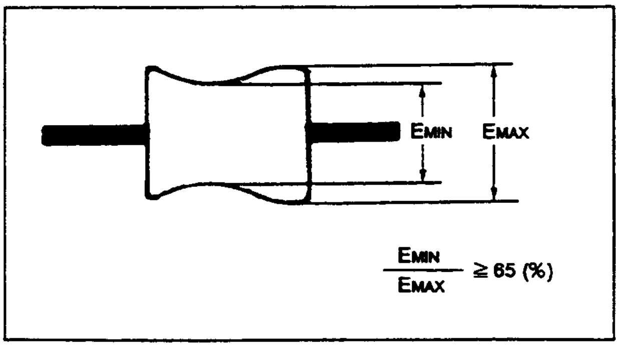
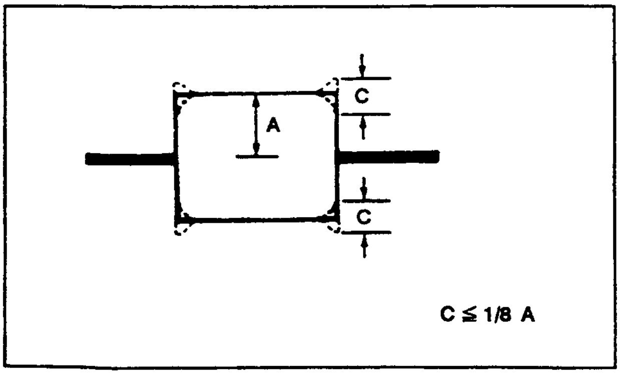


Fig. 43



$$\frac{E_{MIN}}{E_{MAX}} \geq 65\ (\%)$$

Fig. 44



$C \leq 1/8\ A$

Fig. 45

### 4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

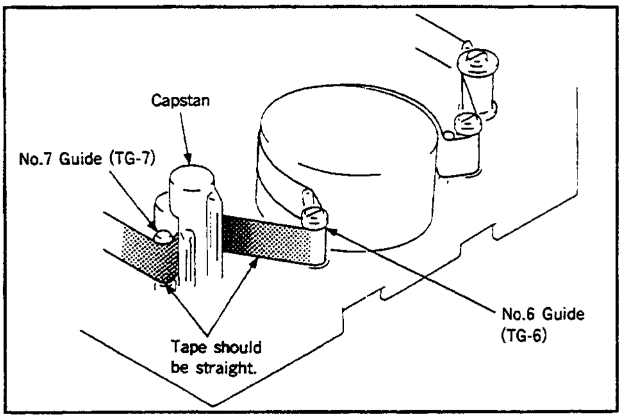

Capstan
No.7 Guide (TG-7)
Tape should be straight.
No.6 Guide (TG-6)

Fig. 46

### 4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

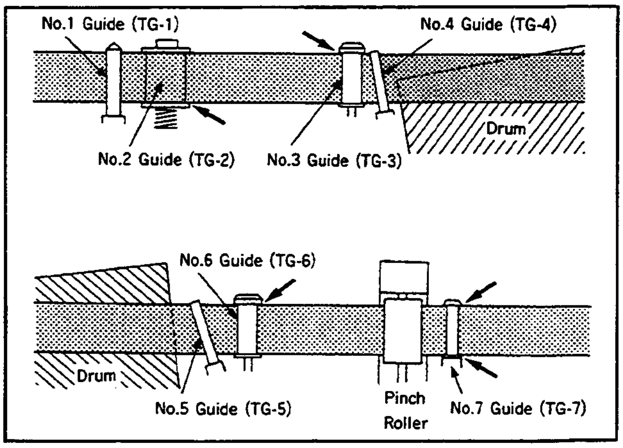

No.1 Guide (TG-1)
No.4 Guide (TG-4)
Drum
No.2 Guide (TG-2)
No.3 Guide (TG-3)
No.6 Guide (TG-6)
Drum
No.5 Guide (TG-5)
Pinch Roller
No.7 Guide (TG-7)

Fig. 47

# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

## A MECHANISM

## SUPPLIMENT-2

**Video 8**

### <Connection of Mode Selector IV Conversion Connector>

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

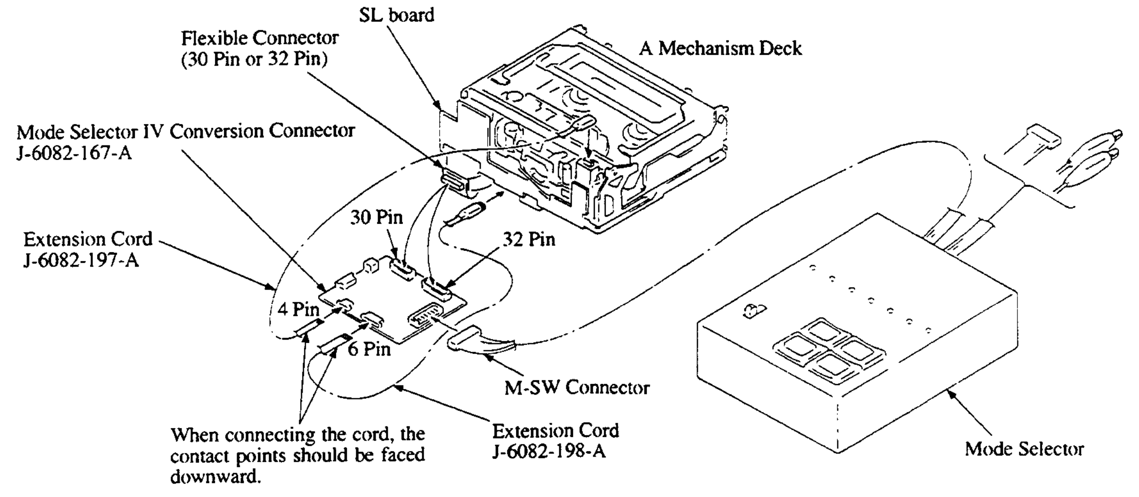
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

(CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477))

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.


SL board
Flexible Connector (30 Pin or 32 Pin)
A Mechanism Deck
Mode Selector IV Conversion Connector J-6082-167-A
30 Pin
Extension Cord J-6082-197-A
32 Pin
4 Pin
6 Pin
M-SW Connector
When connecting the cord, the contact points should be faced downward.
Extension Cord J-6082-198-A
Mode Selector

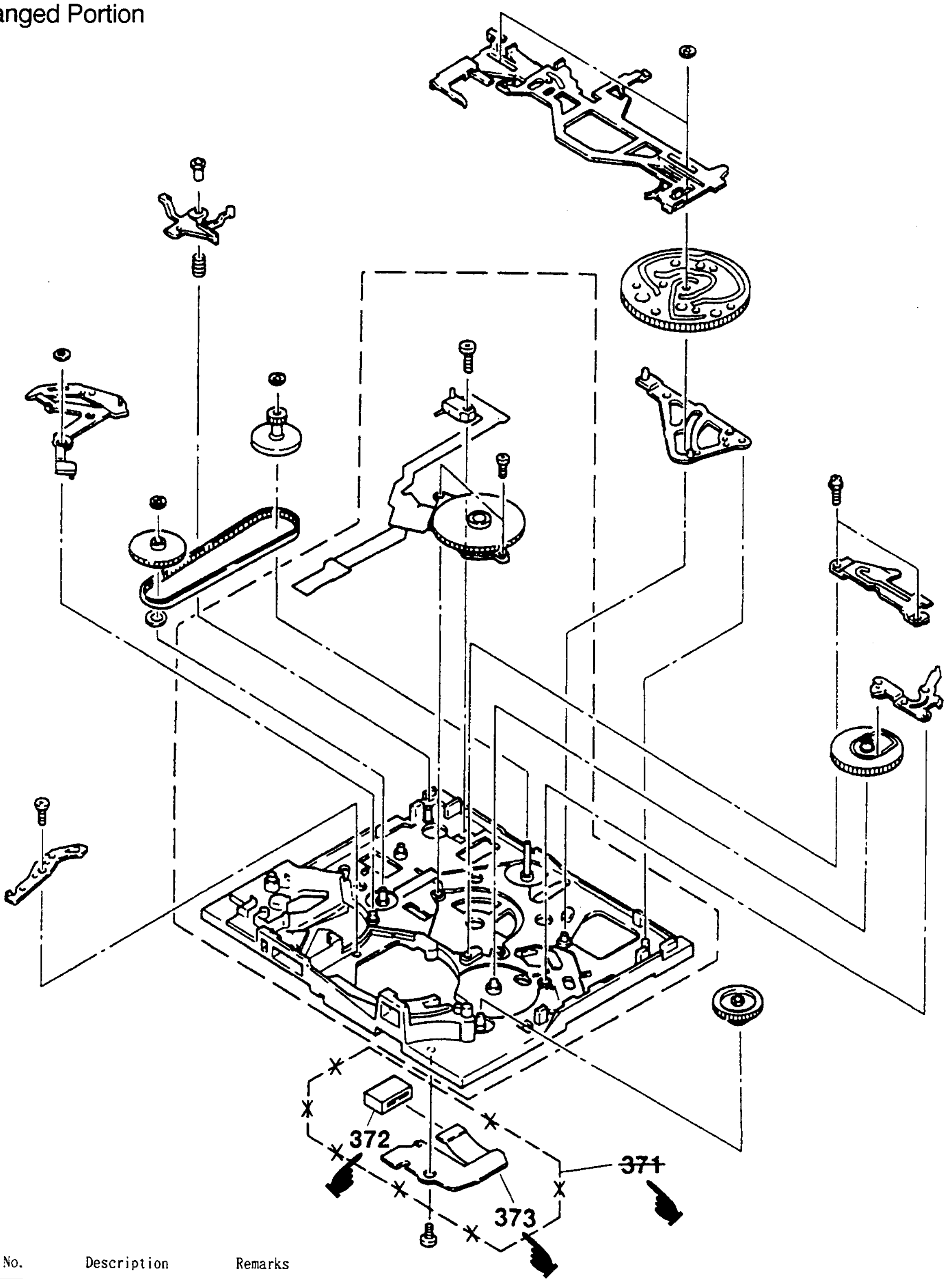
### <CORRECTION>

P10. 2-4 Service jigs list

| | | Incorrect | | Correct |
|---|---|---|---|---|
| J-15 | FWD B.T adjusting driver | J-6082-182-A | ➔ | J-6082-187-A |

## MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



| Ref.No. | Part No. | Description | Remarks |
|---|---|---|---|
| ~~371~~ | ~~A-7040-311-A~~ | ~~FP-444 ASSY~~ | ☛ |
| 372 | 1-691-254-13 | CONNECTOR, TRANSLATION 10P | ☛ |
| 373 | 1-641-639-13 | FP-442 FLEXIBLE BOARD | ☛ |

9-973-199-84

**Sony Corporation**
**Personal Video Group**

**English**
93E18163-1
Printed in Japan

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# 8mm Video MECHANICAL ADJUSTMENT MANUAL IV

English
92C18143-1
Printed in Japan

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9-973-199-11